

**SPECIAL ISSUE: The Very Best Mac Hardware and Software**

MARCH 1991

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# MacUser

**THE 6TH ANNUAL  
EDITORS'  
CHOICE  
AWARDS**

Your guide to the  
**94 BEST NEW**  
Macintosh products  
of the year

**MacUSER  
LABS** MACUSER LABS  
picks the best  
personal PostScript  
laser printers

- **SHOOT-OUTS:**  
Mapping and 32-bit  
color paint software  
for business
- **SNEAK PREVIEWS:**  
Excel 3.0 and the  
unique GO PenPoint



# You do it by th





# inking small.



When we introduced Microsoft Word six years ago, we weren't planning on making history.

We had just one goal, and a fairly simple one at that: to make a word processor that suited people's needs.

Then again, we knew that the people we wanted to suit were a wildly diverse, independent lot: Mac® users. So it made sense to let them tell us exactly what to put into Word.

Which they did.

First, there were some folks who didn't like tabbing much. Fair enough. For them, we developed Tables—an easier way to set up side-by-side paragraphs, columns of numbers, even forms. No tabs. No hassle.

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We made that simple with "warm links." Once you've linked Microsoft Excel data to a document, keeping that document updated with the latest Microsoft Excel figures is easy. Just click your mouse.

Then there were those senders of mail, who didn't want to click-click-click-click-click. So we built support for Microsoft Mail right into Word. Now, with just a click, everyone stays in the loop. And work in progress *stays* in progress.

Apparently, listening to what people want is a pretty good way to design software.

How else can we explain Word 4.0 being the most popular word processor in Mac history?

And those cards and letters are still coming. "Listen," someone'll say. "In case you guys are working on the next Word..."

Which we are. In fact, if you've got some input for us, feel free to drop us a line. Or if you'd like to find out more about Word, call us at (800) 541-1261, Dept. N26.

Our goal is still simple: to make Word the best word processor around. With the latest technology—translated into human terms, of course.

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don't become  
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word processor  
in Mac history  
by thinking big.







# MacUser

**MARCH 1991**

Volume 7 Number 3



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## Features

### The 6th Annual Editors' Choice Awards

BY THE EDITORS OF MACUSER

This year nearly three dozen Eddy awards will go to the best and the brightest products for the Mac as well as to several outstanding people behind the products. The categories cover everything from the best animation program to the best work-group product. Now see if you can guess what won the two Product of the Year awards — Hardware and Software — before finding out what we chose. .... **97**

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BY BRUCE FRASER AND THE MACUSER LABS STAFF

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BY DARRYL LEWIS, KELLI WISETH,  
AND THE MACUSER LABS STAFF

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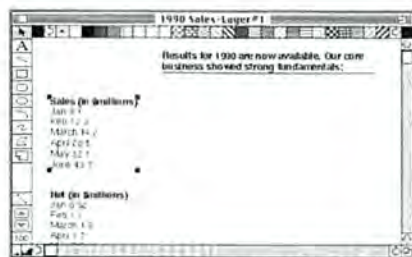
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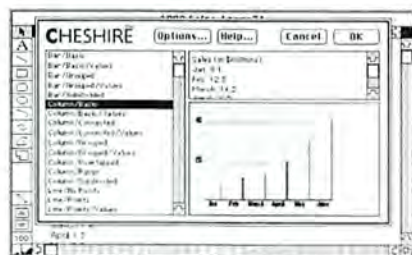
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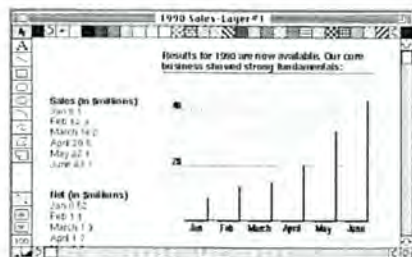
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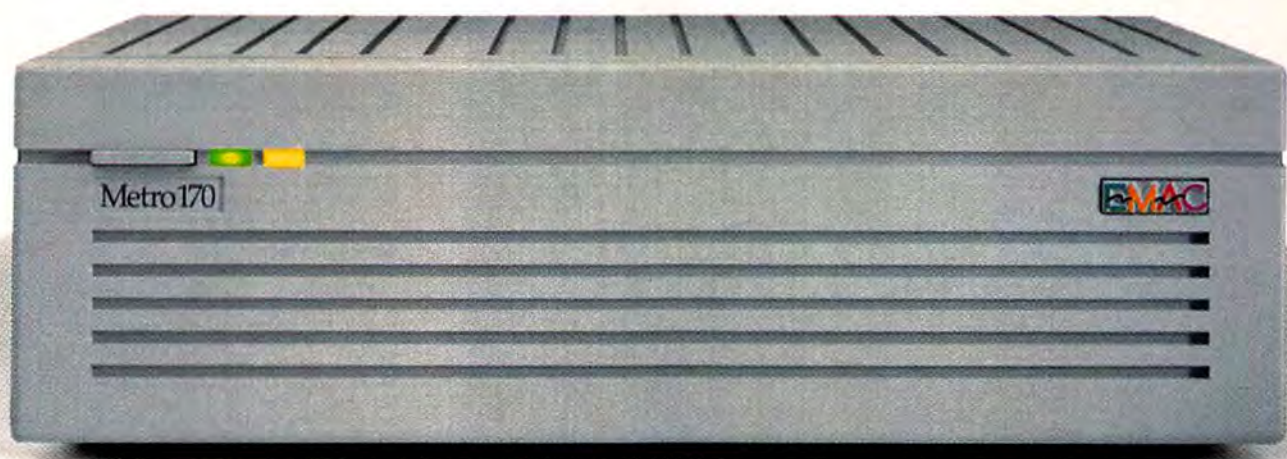
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### Product Announcements and Updates

Please send your letters or press releases about new products or upgrades to Michele Stokol, Assistant Editor, *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404, or type GO MACUSER on Zmac.

### Help Folder

If you've got a Mac question or problem, send it to Help Folder, c/o *MacUser* at the above address, or for a personal answer to your problem, type GO TECHSUPPORT on Zmac. You should also take advantage of local user groups. You can find the one nearest you by calling Apple toll-free at (800) 538-9696, ext. 500.

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We'd like to hear from any programmer who is interested in contributing to our utilities disk or labs-benchmark disk series. If you're interested, contact Michele Stokol at the above address.

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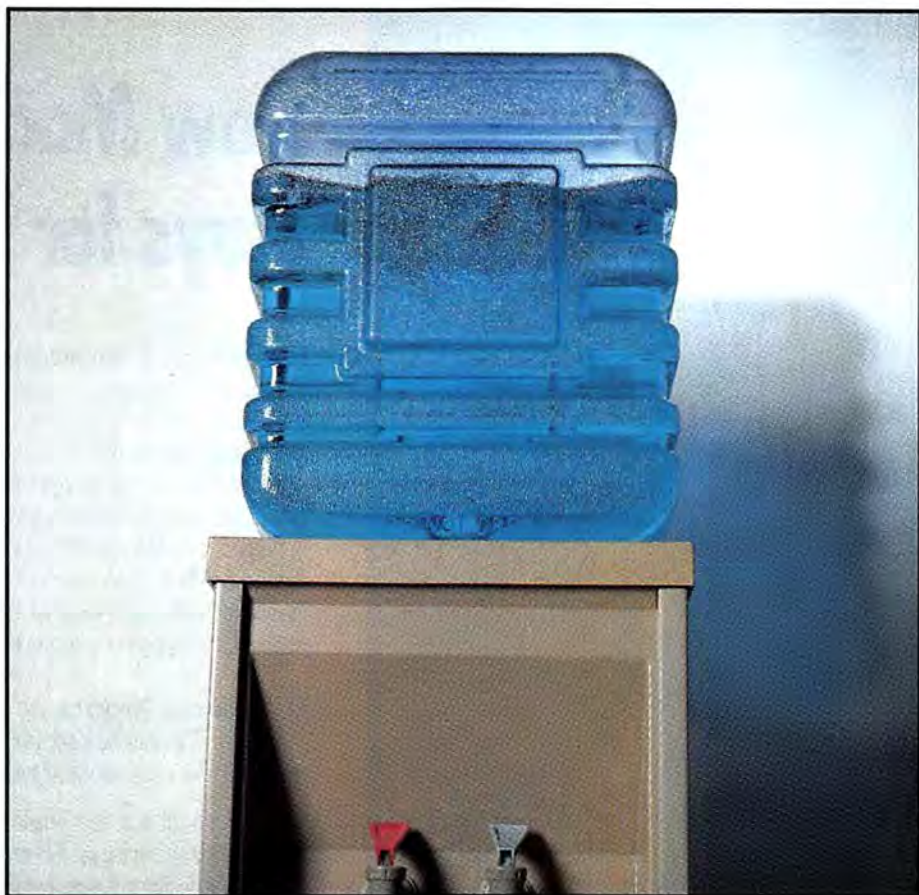
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Kristin Kozlowski, National Account Manager for a Fortune 500 Company

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About

## MacUser True Stories

**T**he Bronze Age started five years ago — well, at least it did for Mac users. That's when artisans melted a precise mixture of copper and tin and then poured a white-hot stream of the alloy into the mold of the first Eddy award.

Twenty-eight gleaming statuettes were cast that year. Each held a miniature 128K Mac high overhead. Each was ready to bestow a year's worth of glory on the Mac products that had the right stuff.

*MacUser* had actually started the annual awards in 1986 — a year prior to the appearance of the bronze statue. The first awards were represented only by an illustration of an unnamed female figure who graced the cover of the first awards issue.

In that first year, Microsoft's second try at a Mac spreadsheet program, **Excel**, swept the field. It earned Microsoft four awards (Best General Business Program, Best Spreadsheet, Best Integrated Software, and Best Overall Program of 1985). Other winners included **MacPaint**, **MacDraw**, and an innovative new package called **PageMaker**.


In 1986 Eddy underwent a sex change and gained a real body, albeit one that bent backward (this can apparently be attributed to a postal worker somewhere between the sculptor's studio and the foundry who interpreted the term "drop shipment" literally).

Eddy honored many products in 1987 that have made lasting contributions to user productivity (some of them are still winning awards in their later incarnations). A few highlights include Microsoft **Works**; **MORE**, from Living Videotext; Softview's **MacInTax**; and the Radius **Full Page Display**.

In 1988 Eddy stood up straight and headed for Apple's mantelpiece with the award for 1987's Best New Product, the **Mac II**. The man of bronze honored 30 other products such as **4th Dimension**, from ACIUS, and CE Software's **QuickKeys**. The award for the Most Innovative Concept went to a new idea from Bill Atkinson called **HyperCard**.

An SE replaced the 128K Mac in Eddy's hands just in time for the 1989 awards, which went to Intuit's **Quicken**, Aldus' **Persuasion**, Fox Software's **FoxBASE+/Mac**, and Adobe's **Illustrator 88**, to name a few.

Last year 430 pounds' worth of Eddies were distributed and are now gracing the trophy cases of vendors large and small. The award for Software Product of the Year went to **Freedom of Press**, from Custom Applications International, and the top hardware honors went to the **Mac Portable** (we know it's no laptop, but it's still a wonder). And we added two special awards that honor the people behind Mac products. These awards went to the original Macintosh Development Team and compression wizard Raymond Lau.

And now for the 1991 awards. Eddy's ready. And we bet you are too. 



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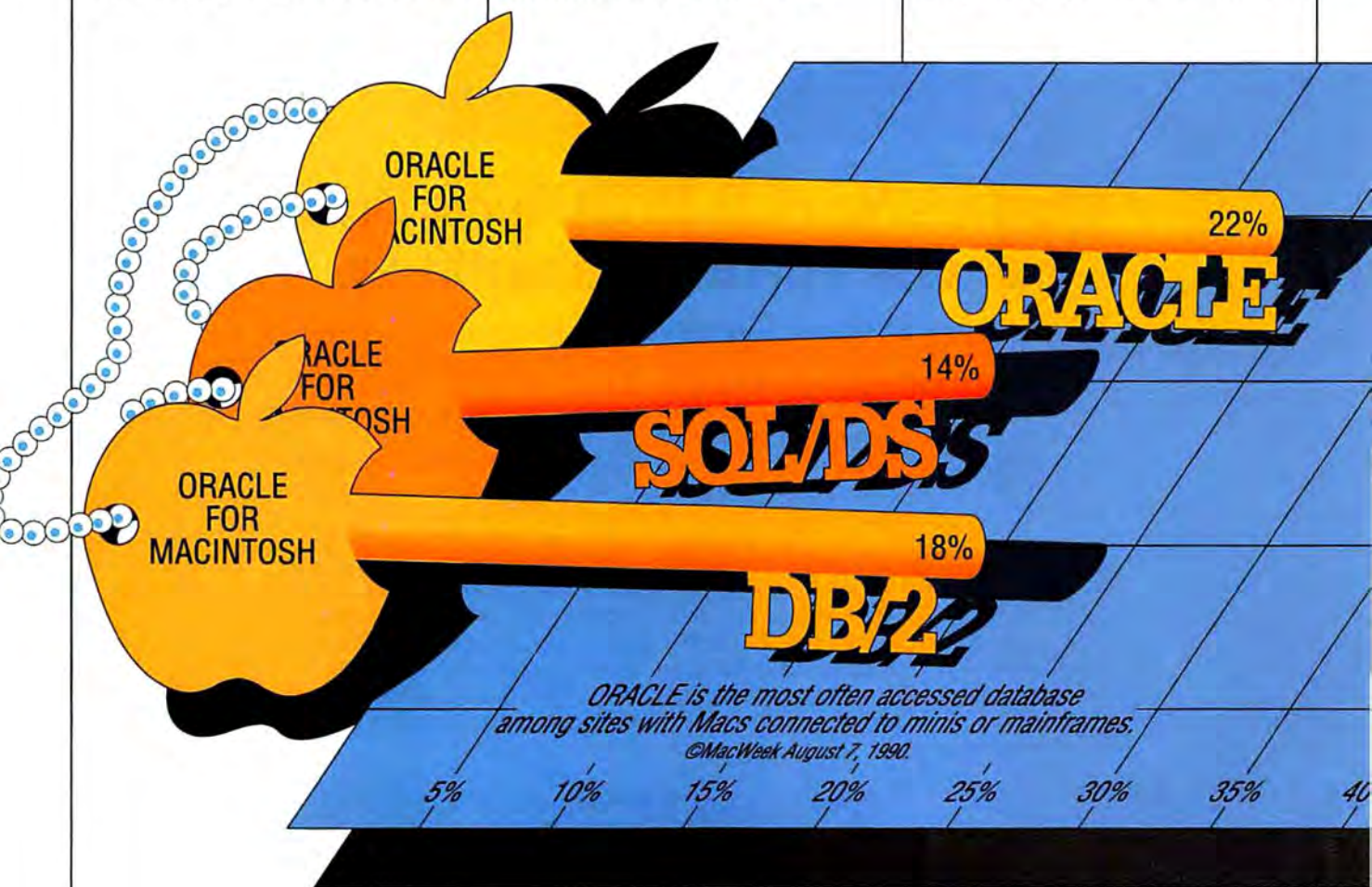
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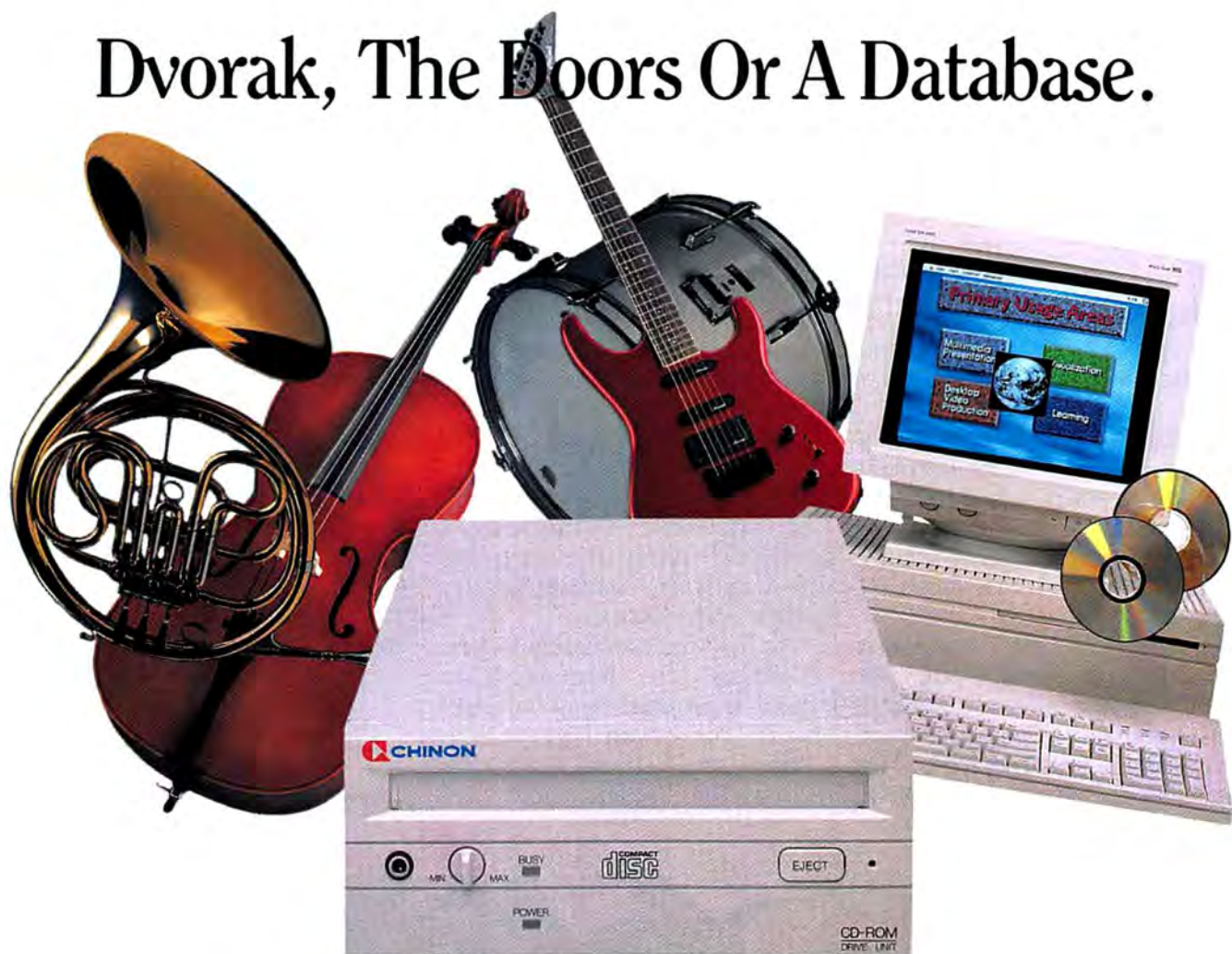
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Jacob Roquet of New Bern, North Carolina, graciously concedes that he won no prizes for answering our reader survey. He was satisfied to see his comment about the concept of modular programming in print—with one gripe: "There was no attribution. When I tell my friends that I said that, they all say: 'Sure. Right, Jake! Nobody ever listens to you!' So my 15 minutes of fame were lost. My buddies now tease me about every unattributable quote, including certain parts of the Old Testament. 'We suppose you said this too, Jake?' And I blush in humiliation."

OK, Jake, go and blush no more.

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## New Mac Cheers and Jeers

I enjoyed your coverage in the December '90 issue on the new Mac models ("Three Cheers for Three New Macs," page 90) recently introduced by Apple Computer. In your review, you indicated that the new Macintosh Classic (\$1,000,000 for the name!?) was a direct descendant of the Mac SE. If that's true, why is it that the Classic and the SE did not perform identically in your tests of overall speed and speed in disk-intensive tasks? Even the other tests show differences I would not have expected. I'm sure other readers are as interested as I am in why the SE seems to outperform the new Classic. Many of your pictures of the Mac models show that they use Conner hard-disk drives. What hard drive is used in the Classic?

Finally, I'm very interested in what third-party color video monitors are fully compatible with the Mac LC and the Mac IIsi. In particular, the NEC MacSync 14-inch, Sony 1304 14-inch, Magnavox 14-inch, and the Seiko 14-inch monitors are all sold for Macs. Are any of these directly compatible with the built-in color video without the need to purchase a separate color-video card?

Craig Peterson  
Santa Monica, CA

The Classic is a redesigned and cost-reduced SE with newer ROMs. Nonetheless, the raw processing power of the two machines

is nearly identical. However, the new Conner hard-disk drive in the Classic is slower than the Quantum drive in the SE. As a result, "overall" performance is slightly lower.

Apple's latest monitor family uses one common 15-pin D connector that has certain identification pins shorted together to tell the host CPU or video card if a monitor is connected and what kind it is. The four you mention are designed to be compatible with the AppleColor High-Resolution RGB Monitor, so they all should have the correct pins shorted together. A quick way to check is to plug the monitor into a IICI, and if the IICI's video circuitry jumps to life, the correct identification pins are shorted and the monitor will work with the IIsi and the LC. Remember, with any of these monitors and the LC, you'll get only 4-bit color unless you purchase the optional 512K VRAM SIMM.

—JP

Here I am on my Mac Plus, using Microsoft Word 4.0 and reading about the supposedly "great new Macs." Your article, far from being an objective look at the new machines, is more like a sugar-coated news release from Apple.

Apple has put out the Classic with an 8-megahertz 68000 processor, 1 megabyte of memory, and a 9-inch monochrome monitor. This is better than the Mac Plus? Why? It's no more expandable, it's not appreciably faster (couldn't Apple at least have used the Portable's

## Dear Mr. Sculley . . .

Apple paid \$1 million for the rights to the name Classic, and the cynics laughed. The only laughter you hear now is from Cupertino and headed for the bank. Low-cost Macs—especially the Classic—threaten to reverse the downward trend in Apple's market share. No one will ever again argue against the viability of inexpensive Macintosh CPUs. The question now is, Where will the next bargain be?

### Speak Up: What should Apple's next low-cost product be?

✉ Send your thoughts to Dear Mr. Sculley, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

Thomas E. Moore of Huntsville, Alabama, points to the Macintosh OS as the best reason to switch to a Mac: "It's said that people buy computers not for their operating system but for the applications. That may be because they don't appreciate how an OS that provides long filenames, associates files with responsible applications, and makes device drivers application-

independent can actually free the user from solving computer problems to focus on real problem solving."

Speaking of problem solving, Brian Marantz, of Irvine, California, has a few problems with the Mac's ease of use: "1. Hooking up SCSI devices. When, where, how many? What, you mean it might have internal termination? 2. 'Application Unexpectedly Quit.' Why? 3. INIT/cdev conflicts. Despite these, I still don't consider PCs in the same league as Macs. I would rather have a Mac anyplace, anyhow, anywhere."

More on sound on the Mac: Neil M. Kosterman, of Wheaton, Illinois, believes that "Sound in and of itself is not where the action is but rather the improvement in productivity it can bring to the typical business office. We should soon be able to dictate memoranda, letters, and so on into the Mac for draft-copy output. Those of us who prefer to work directly on the Mac can then edit our own work, greatly reducing the overall turnaround time for handling correspondence." We just hope that "mab," who typed Neil's letter, won't be out of a job.





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## LETTERS

16-megahertz processor?), and you can't expand it with an accelerator or monitor (not easily anyway).

The Mac LC isn't much better. In some ways, it's far worse! A 16-megahertz 68020 (basically obsolete) with no chance of even separately purchasing a math coprocessor or PMMU is ridiculous, especially in view of the fact that Apple's System 7.0 (if it's ever released) needs the PMMU chip for its virtual-memory option. Is it really worth \$2,500 to get a crippled color computer that runs System 7.0 imperfectly with RGB color (that'll wow those poor PC users with VGA). In case this wasn't stupid enough, Apple provided only a single (direct-processor) slot (incompatible with all existing Apple slots, as nearly as I can determine).

As for the Mac IIx, it's so far out of my price range that it's pointless to even comment on its deficiencies.

It seems to me that Apple has produced a line of slightly less blatantly overpriced, crippled Macs that won't interfere with its existing product line and that it can maybe sell to people who don't know any better. Because these new Macs are cheaper for Apple to produce, it can maintain its ridiculous profit margins. There's less room to grow with the computers than with IBM's PS/1 (and that's really saying something).

These products won't rescue Apple from future extinction at the hands of the PC clones; rather they will guarantee it.

David W. Griffin  
Gautier, MS

*The Classic is an SE at just over a third the price—and you're complaining? And don't worry about expandability—full-page and two-page monitors are already appearing; accelerators surely can't be far behind.*

*The LC is a one-slot Mac II at well below half the II's final price. The PMMU and math coprocessor you crave are certain to be provided soon by third-party vendors.*

*As for the Mac's "future extinction," I'll bet you a few shares of Apple stock that Cupertino will be a happy town for years to come, and tens of thousands of new Classic owners agree. — RM*

### Trading Up

My single goal in January 1990 was to be the proud owner of my own Mac before the end of the year. In August 1990, I bought a new SE with 4 megabytes of RAM and an 80-megabyte internal hard-

disk drive, and it is serving me well.

On October 15, I drove 120 miles round-trip to see the debut of the three new Macs in Albuquerque. I was very impressed, especially with the new lower prices.

If Apple had a "Mac Buy Back" program, I'd trade my SE in for the new LC. If I'm thinking this way, then other Mac owners must be having similar thoughts.

Consider an idea whose time has come.  
Gloria Masters  
Tesuque, NM

### Prime Rib

In your "More Than You Know?" quiz ("Our Readers Write Back," December '90, page 196), number 3, you state, "Of the Mac SE, the Mac IIcx, and the Mac IIx, it's the only machine whose number of expansion slots is not a prime number." The Mac SE's number of expansion slots isn't a prime number either. A prime number is a number that has two factors. The number 1 has only one factor, 1. The Mac SE has one expansion slot, and therefore its number of expansion slots isn't a prime number.

Jesse Rosenstock  
Madison, WI

*You're a little bit wrong, and I'm a little bit right. By your definition, no number is a prime; every number can be multiplied by 1 x 1 x 1 x 1 x 1 ..., leading to an infinite number of factors. So there!*

*The more common definition of a prime is "a number whose only factors are itself and 1," which you learn in grammar and high school. Then, when you graduate from the AAA leagues of number theory to the Majors, you learn that 1 is, by convention, not considered a prime number. We're both wrong, but if you really want to nitpick—OK, I'm more wrong than you.*

*For more on prime numbers, check out The Book of Prime Number Records by Paolo Ribenboim... insanely fun reading for when the hypercollider is on the fritz. — Al*

### Expensive Fruits

I think Mac vendors need a reality check. Orange Micro's 80286 NuBus board retails for approximately \$1,400. You can purchase an 80286 PC clone with 1 megabyte of memory, a 40-megabyte hard-disk drive, a monitor, and a keyboard for \$1,200.

Recently I read that a certain vendor was going to offer an 80386SX add-in board for \$2,300. Well! You can purchase a 16-megahertz 80386 PC clone with 2

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## LETTERS

megabytes of memory, a 40-megabyte hard-disk drive, a monitor, and a keyboard for \$1,800.

I think someone has a screw loose over at Orange Micro and the rest. No wonder the IBM/Microsoft/clone-maker combination is kicking our behinds.

Trevor Le Gall  
Bloomfield, NJ

*There's one main reason why PCs are so cheap — volume. PCs are produced by the millions, bringing the cost per unit down. Because Orange Micro doesn't manufacture anywhere near that number, its costs are higher than those of a PC manufacturer. For users, there are two chief advantages to putting DOS into your Mac: It takes up less desk space than having both machines (admittedly not a convincing reason for a lot of people), and it's easier to swap data between the Mac and DOS.* —JR

### Pirates and Attorneys

In the October '90 issue, you blast two people for using software that you feel was copied illegally. The two people I am speaking of wrote to Bob LeVitus and his Help Folder. The first occasion is in "Illegals Compatibility Woes," on page 303, and I quote, "You are a registered user aren't you? . . . if not, shame on you." The assumption that the person needing help is automatically a software pirate is unfair. The second offense takes place on pages 305 and 306. LeVitus again condemns a person for using a duplicate copy of a program on the same network.

What makes me angry about this whole dialogue is that on page 372 ("Full-Court Press"), John C. Dvorak complains that the computer industry has gone "insane" owing to the large number of lawsuits over hardware- and interface-copyright infringements. Why do software developers gain your sympathy, while at the same time, hardware developers receive your scorn?

Is a copyright on hardware not the same as a copyright on software? Does it not take an equal amount of effort and creativity? Does it not deserve equal protection under the law?

John Dennis  
St. Louis, MO

*As our contributing anti-editor, John C. Dvorak dishes out scorn as he sees fit, but his views do not necessarily reflect those of our other contributors (or, heaven forbid, the edit staff). In other words, we'd be more worried if he and Bob LeVitus*

*started agreeing on controversial issues.* —JB

I read with interest John C. Dvorak's column ("Full-Court Press," October '90, page 372) regarding the overly litigious nature of our society as it pertains to the computer industry. As an owner of one of Apple's previous victim's products (the Franklin ACE 1000), I concur that Apple has unfortunately been more aggressive in protecting its position with "courthouse intimidation" than in providing better quality, lower prices, and better technology. The people running Apple seem to have forgotten that its roots were in an "open top, have it" era of computer development. Maybe they ought to go back and review the history and attitudes of their founders.

As far as I'm concerned, Apple deserves any and all hardship. Let it keep suing. It only detracts further from the proper defense against competition: better products with better values at better prices. Continuing to support these litigious bullies by purchasing Macs only encourages them!

As far as Mr. Dvorak's comment regarding being "surrounded by idiots" is concerned, this is truly very very sad! If we've allowed ourselves to become surrounded by idiots, how smart does that make us?

Dennis Novotny  
Ann Arbor, MI

### Adios, Amiga

Here's an "insanely great" idea for Apple: Merge with Commodore. Each company has what the other one desperately wants and needs, namely:

1. Apple needs truly visionary hardware design. Commodore has it, as evidenced by the slick and innovative designs in the Amiga line.

2. Commodore needs marketing savvy, which Apple obviously has.

3. Apple wants to be a leader in multimedia and to expand in the video, sound, and animation areas. These are precisely the areas in which the Amiga shines the brightest.

4. Commodore wants the Amiga to be a professional computer, and it needs a more diversified software base, particularly in the areas of productivity, business, desktop publishing, and music. Anyone know a platform with those applications?

With Apple's success in the business market and Commodore's success in the home market, these two should team up



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Perhaps Chris Prior of MacUser UK summed it up best when he wrote that "UltraPaint...could prove to be the ideal software package for those looking for a powerful, all-around draw and paint program."

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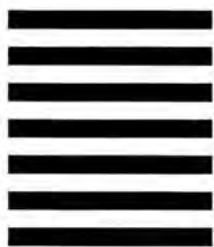






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## LETTERS

and leave Big Blue and friends in the dust. A hybrid Mac/Amiga computer would be the personal platform for the '90s.

Bob Weaver  
San Diego, CA

"Insanely great" or just plain insane?  
From here, it looks like the low-cost Macs may already have left the Amiga in the lurch. —JB

### Beaten by the System

I'm a business user doing advertising with three networked SEs. The business sells directly through catalogs that we schedule, assemble, lay out, and typeset on the Mac. We send out more than a million catalogs a year.

With that as a background to show that this is serious business, I'm growing more impatient with the fragility of the Mac operating systems. Where in the much-ballyhooed System 7.0 is this terrible problem of Mac bombs addressed? Believe me, serious business users are going to abandon the Mac if its System is not bombproofed.

Paul White  
Charlotteville, NY

*The weak link in the Mac chain has always been its System software. Every version fixes bugs but also adds capabilities (which means new bugs). So what's the answer? Don't wait for Apple. Keep your Systems pristine and clean. None of those cute INITs and cdevs (this means giving up a lot of capability, but it's necessary). Periodically replace your System, using the Installer (after first trashing the System file) to guard against corruption. Use Disinfectant or Virus Detective to protect against viruses. And whatever you do, don't migrate to new System software unless you know for a fact that it will fix specific problems you are having. —RW*

### Receding Hairlines

During the months of delay preceding the arrival of FileMaker Pro, I practiced persuading myself that Claris would not be like some other software publishers we could name. Over and over, I said to myself: This product will be flawless. It will be worth the wait. I confidently scooped up my copy the moment it hit the shelves.

FileMaker Pro is a slick application. It performs as advertised, except for one literally tiny problem: It won't print hairlines on a Mac Ili. So I heave a sigh and phone the friendly technical-support people in Santa Clara. A few bucks later,

I learn, "Yes, we know about the problem — it affects all Mac Ili's or newer" but "No, we don't know when it will be fixed."

C'mon, Apple, cough up a couple of Ili's for Claris. This must be embarrassing for it, being a wholly owned subsidiary and not knowing if its applications are compatible with the product line.

Mitchel R. Stone  
Santa Paula, CA

*We have several FileMaker users on our staff, and we were disappointed that Claris let a couple of things such as hairlines and compatibility with third-party printers such as HP's DeskWriter slip through the cracks. For more on FileMaker Pro's strengths and weaknesses, see the review in this issue. —RI*

### Handwriting Analyses

I disagree with Robert Wiggins' belief that a perfected handwriting-recognition technology would be no better than a keyboard ("A Tale of Two Fads," December '90, page 43). Although a writing tablet and pen might not replace all keyboards, they could provide an alternative input device with the potential to revolutionize the industry.

Today, many people use clipboards or notebooks when they work. They bring the clipboards to places where a portable computer is impractical and later go back to their computer, sit down, and type the data from their notes into the computer.

Furthermore, a keyboard slab forces you to hold an unnatural posture, which is why many people who use computers for long hours develop chronic pains. A computer writing tablet would let people use a greater variety of natural relaxing postures.

Earl Harris, Jr.  
New York, NY

I'm perturbed by the attitude I've seen in *MacUser* in the past few issues. Mac users are supposed to be the avant garde, the forward-looking fringe of micro-computerdom. However, both Robert Wiggins and John Dvorak have stated (very strongly) that usable handwriting recognition does not seem possible with present technology. Now, I can understand Dvorak's position, because he is a paid nay-sayer, but I would expect other editors to be a bit more open-minded.

I really can't argue for or against the utility of such an interface, but I'd like to point out that from a technical standpoint, handwriting recognition is not nearly as

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difficult as it may seem.

Handwriting recognition is very different from optical-recognition technology. In OCR the recognition program must work from a low-resolution bit map. Every little blob or dot on the page might be

a character, or it might just be noise. Finding the characters alone can be pretty difficult.

In handwriting analysis, the program receives not only shape information but also stroke information. For instance, it

can know that the letter *M* is made with an upstroke, a downstroke, an upstroke, and a final downstroke. If the last two strokes are too close together, an OCR program might see the letter *N*.

The time available for recognizing a character is much greater for handwriting recognition. A certain OCR company advertises a recognition rate of 500 words per minute. Do you know anybody who can write that fast? Therefore a handwriting recognizer can afford to take more time for better processing.

Mike Pagan  
Paramus, NJ

*Don't worry, we haven't crossed handwriting-recognition technology off our list yet. See this month's Bridges section for a preview of GO Corp.'s exciting new Pen-Point operating system. —JB*

#### Type Writer

As one keenly interested in typographic programs, I was happy to see Eric Taub's review ("Twisting, Shouting Type," December '90, page 211) of type-manipulation software.

Type-effects programs available on the Mac are giving type a wonderful graphic flexibility, and this article was an excellent outline of type-manipulation effects possible with today's software.

Just an update note: Mr. Taub's review may not have been based on the latest release of LetraStudio. LetraStudio 1.53 solves the memory problem previously caused by scanning a large volume of fonts. Version 1.53 also reduces the number of Bezier points that appear after a distortion effect, thus making it easier to edit a LetraStudio outline in a drawing program supporting the Illustrator format. LetraStudio users can call (800) 343-8973 for a free upgrade.

Alan Leverenz  
Type Products Manager  
Letraset  
Paramus, NJ

#### Apple Polishing

As a computer coordinator in a small school district in Oklahoma, I find it obvious what would keep Apple ahead in the battle for computer dominance. Out of our 150 teachers, less than 10 percent own a computer or use one on a regular basis to help them in their class work. The biggest percentage of our teachers are still scared of computers. Whose fault is that?

Have we seen a concerted effort by Apple to really get computers into the



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hands of educators? Oh yes, teachers have an "educator's discount." Has it worked? Of course not.

All teachers ought to have a Mac on their desk, but until the powers that be can prove to teachers that a computer is worthwhile, teachers won't plunk down nearly \$1,800 for a computer, software, and a printer. But we know too that unless teachers have their own personal Mac to take home, they will never learn to use it. Even today, most of our teachers do most of their grading, noting, and preparing for the next day at home. So what is the answer?

Even if Apple has to lose big money, put a Mac onto every teacher's desk and into every teacher's home, along with Microsoft Works. If teachers learn to use a Mac, what product do you think they'll recommend to their students? What computer do you think they'll recommend to every parent?

Apple is interested only in immediate dollars for its already richly lined pockets instead of in providing a little seed money to assure future dominance in an already cluttered computer-using society.

Dale W. Hill  
Washita, OK

#### Who Is This Guy?

Who is this Guy Kawasaki? Is he really Mike Eruzione? Is there something you're not telling us? For those of you who may not remember, Mike Eruzione was the captain of the 1980 U.S. Olympic Hockey Team, the one that won the gold medal. Mr. Eruzione has managed to make a fine living from reliving those glorious moments.

Looking back to that final moment when the young team won the gold gives me chills right now; thinking about the birth of the Macintosh does not. I will be succinct: The Mac is unarguably a fabulous machine, but that does not mean I wish to read each month what fun the early Apple managers had in those days. I read Guy's book. I hated it. I have had enough of his self-serving diatribe.

Evangelism is Guy's hot topic. We read about it constantly. It pays his bills. Advice is important to him as well. Evangelistic advice seems to be Nirvana for Guy Kawasaki. I offer some to him: Move on. You have earned the respect given you. But it is time now to develop, evangelize (although I despise the term), proselytize something. But please, and I mean this in the nicest way possible, do not write about

it; your field is sales and evangelism, not writing.

Timothy Eustis  
Brookline, MA

I don't suppose you'll be buying my next book. It's called *To Sell a Dream*, and

Harper Collins is the publisher. It is 200 pages about how to do evangelism for any product, company, or idea. (It evangelizes evangelism.) Thank you for providing me with the perfect opportunity to plug it. (Evangelists never rest.)—GK

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**Trackball Tracking**

A Kensington Turbo Mouse I had sent back for repairs got lost in the mail last summer. While the search was going on for my missing mouse, Abby Scheck, the assistant to the president of Kensington Microware, phoned me three times to assure me that a tracer had been put on the package and that a replacement mouse was being sent for me to use until the original could be found.

Even though UPS records eventually revealed that the repaired mouse had been promptly mailed back and gotten mislaid somewhere on my college campus, the good people at Kensington Microware continued to stay in touch and actually mailed me the loaner unit, as they had promised.

This kind of civilized response is rare indeed. In the area of customer relations, Kensington Microware richly deserves Five Big Mice. This company is truly a class act.

Jim Fetler  
Los Altos Hills, CA

## Perhaps the workers at Microsoft should request a new work layout.

**Where's the Word?**

I was most interested when I read the letter from Rae Schauer of Milligan College, Tennessee, concerning the Mac freeze (December '90, page 13). I have spent hours trying to locate the solution to the problem in one of the back issues. Shame on you for not publishing which issue.

Helen Silberbush  
Brooklyn, NY

*If you're lucky, you may still have it in that pile of magazines by the garage door — take a look in the April '90 issue, page 261. — JB*

**Emission Improbable**

I can't help but comment on the full-page photograph used in Microsoft's ad on page 1 of the December '90 issue.

There is growing controversy about the

radiation from personal computers lately, and the worst levels are emitted from the rear of the machines. Perhaps the workers at Microsoft should request a new work layout!

Elliott Bernshaw  
Salt Lake City, UT

*But the workers in the photo obviously aren't at Microsoft. If they were, the desks would be arranged differently — facing the Windows. — JB*

**Clarifications**

In "Beyond the Laser Printer" (January '91, page 197), the information about compatibility problems with Type 1 fonts was incorrect. The current line of LaserMAX printers works with Type 1 fonts, and former Mac compatibility problems have been resolved.

An incorrect telephone number was listed for Peachpit Press (publisher of *The Little Mac Book* and *The Mac Is Not a Typewriter*) on page 174 of the December '90 issue. The correct number is (800) 283-9444.

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**PC Magazine**

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**Robert Cullen, Home Office Computing**

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*10BaseT technology can turn your telephone lines into a high speed, easy-to-maintain Ethernet network.*



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And with the Asanté 10T MAU™ transceiver, you can plug your PCs or other computers with thick Ethernet cards into your 10BaseT Macintosh network, and answer all of your needs.



*Only Asanté, the leader in Macintosh networking technology, gives you everything you need to plug into Ethernet, no matter what Macintosh you own.*

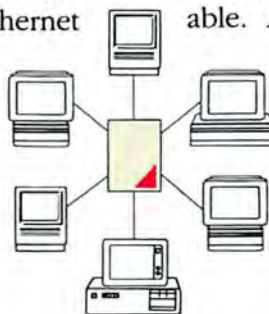
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# Myth Communication



**Miffed by how the mass media has mangled the many myths of the Mac? Here's how reality is finally helping the market mature. Plus: The not-quite-the-Eddy awards and some predictions about next year's Eddys.**

**T**he Apple Macintosh Classic is the best choice for owners of home-based businesses, students, writers, and anyone else who doesn't need IBM compatibility or a color display."

Not a surprising statement in the pages of *MacUser*. But it originated in the pages of *Consumer Reports*' January '91 issue.

In his November '90 TechnoCulture column in *Esquire*, Donald R. Katz detailed his mix of angst and apathy over the fact that his character-based computer was becoming a "dinosaur": "GUI [graphical user interface] software turns a computer into a graphic environment, not unlike Pee-wee's Playhouse. It allows your dumb computer to become a hardworking metaphor." Although Mr. Katz's phooey-to-GUI sarcasm is apparent, his anxiety is rooted in the fact that even IBM and Microsoft, following six years behind in Apple's footsteps, have now gone GUI.

The mainstream media is finally getting the message. The myths of the Macintosh — both the good ones and the bizarre ones — are finally disappearing into oblivion.

Myths like: A graphical user interface is just a cosmetic touch-up, the computer equivalent of aluminum siding. The success of Microsoft's Windows 3.0 in the IBM world vindicates what Mac users have known all along: GUI is simply better. (You have to love those Microsoft ads that proclaim that now there's finally an alternative to the C-prompt. Just who do they think foisted the C-prompt on the world in the first place? Maybe someone should remind Microsoft what the MS in MS-DOS stands for.)

There's also the myth that Windows 3.0 means trouble for the Mac. The reality is that Win3 is one of the biggest successes in shelfware — software you use (or try to use) once or twice before retiring it to the software library. The plain fact is that to run Win3 reasonably well, you need a lot more hardware than most DOS users have, you need to switch to software products that probably aren't the ones you've been using, and you have to resign yourself to being an unpaid (in fact, a paying) beta tester for Microsoft.

In the same issue of *Consumer Reports*, a letter from a reader complained about a top-rated dedicated word processor that worked nicely except for one flaw: The error-message beep was meaningless to her hard-of-hearing son. Of course, that's no problem on a Mac — you can simply go to the Control Panel, set the

volume control to zero, and the beep sound is transformed into a flashing menu bar. That kind of adaptability and unexpected robustness that's been on the Mac for years is exactly why the great Mac versus Win3 debate is nothing more than marketing bluster: A few clickable icons do not a GUI make.

Then there's the myth that the Mac is the more expensive machine. OK, that one used to have a basis in reality. But with street prices for the Mac Classic at less than \$700, the Mac is easily the least-expensive business-class GUI computer on the block, with a time-tested interface and far more software available than any alternative.

Another myth is that Apple can't survive the 1990s unless it opens the market to Mac clones. Although it may be true that Apple missed an opportunity a few years ago to knock IBM off the desktops of corporate America, the reality is that Apple has flourished very nicely, thank you, by following its own closed architecture philosophy. One way to interpret the success of the Classic is that Apple has finally let someone clone the Mac — itself. The Classic, LC, and IIsi are, in fact, everything you'd expect from SE, II, and IIsi clones — comparable power at a lower price. With its new lineup, Apple can compete with the best of the '286, '386, and '486 knockoffs. And by "cloning its own," Apple keeps quality control — and revenues — all in the family.

What this means for you is that you don't have to sneak your Mac in through the back door anymore. The Mac is officially on the approved lists for major business and government sites, endorsed by both the MIS department and the penny-watchers in accounting. And with prices well below the magic \$1,000 point, many computer buyers can now pick up a Classic as an expensable purchase that doesn't require signatures and approval from their bureaucracies.

## Extra Credit

Apple gets the credit for the original allure of the Mac and for successfully repositioning its price points. But the credit for making the Mac a productive tool goes to the hundreds of third-party product developers. For the sixth year, *MacUser* pays tribute to those developers with our annual Editors' Choice Awards. There were, however, a few awards that didn't make it into this month's cover story. To round out our coverage, here are a few extra not-quite-the-Eddy awards.



**Best Pointless Product:** This is a tough category. The Flying Toasters module in the After Dark screen saver came in a close second to Eyeball, a little INIT that pops a pair of eyeballs onto your menu bar that follows your cursor around the screen. A

similar product called Reagan creates a window in which an image of our 40th president does much the same, but the image also blurs out occasional digitized notable quotes in a random Talking Moose-esque fashion.

**Best Press Release:** If the purpose of a press release is to make a memorable impression, the announcement of a certain grammar/style checker from a European vendor takes top honors. The product, which claims to be English-compatible, is, according to the press release, "a professionell solution" that "guarantees every user a very fast work on correction or translation of text." Please — before you release the next release, hire a professionell.

**Best New System Software:** Although System 7.0 was a no-show and HyperCard 2.0 was a yo-yo (from Claris to Apple and back again), A/UX 2 brought us UNIX a-go-go.

**Best T-Shirt:** T-shirts, according to Guy Kawasaki, are not a marketing gimmick; they're a vital part of the product-development cycle. Natch. The popular favorite of the MacUser staff sports the face of the RadiusTV Guy, although several fine entries from Adobe and the inimitable Boston Computer Society Macintosh Jeopardy! entry receive honorable mentions.

**The Milli Vanilli Sham-in-Sheep's-Clothing Award:** Windows 3.0 (see above).

**The Traveling Wilburys Award:** T/Maker's Smart Bundle — four legends of software together again for the first time.

**Best Software Documentation with an Attitude:** How can you ignore Maxis' plea to return your user registration card: "Go ahead — tear me in half. Rip me in two. Pull me to pieces. Split my sides. Pop my perforations. Use me. Write on me . . . Aw, come on, send in the stupid card . . . please, please, please . . ."

#### Award to the Wise

In addition to guiding you to the best of the best new products, the Eddys are also a gauge of the technological trends to keep an eye on. Last year, we cited Articulate Systems' Voice Navigator as the most significant hardware product of the year, and before 1990 was out, sound input had already become an integral part of the new Mac lineup. Last year's software product of the year honors went to Custom Applications International's Freedom of Press, foreshadowing the coming onslaught of competing PostScript and typographic standards. And the best new technology of 1989 — 32-bit QuickDraw — became an instant fact of life for graphic artists.

This year's award winners promise to be just as influential. But your thoughts have probably already turned to the future:

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## Application

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MacDraw II

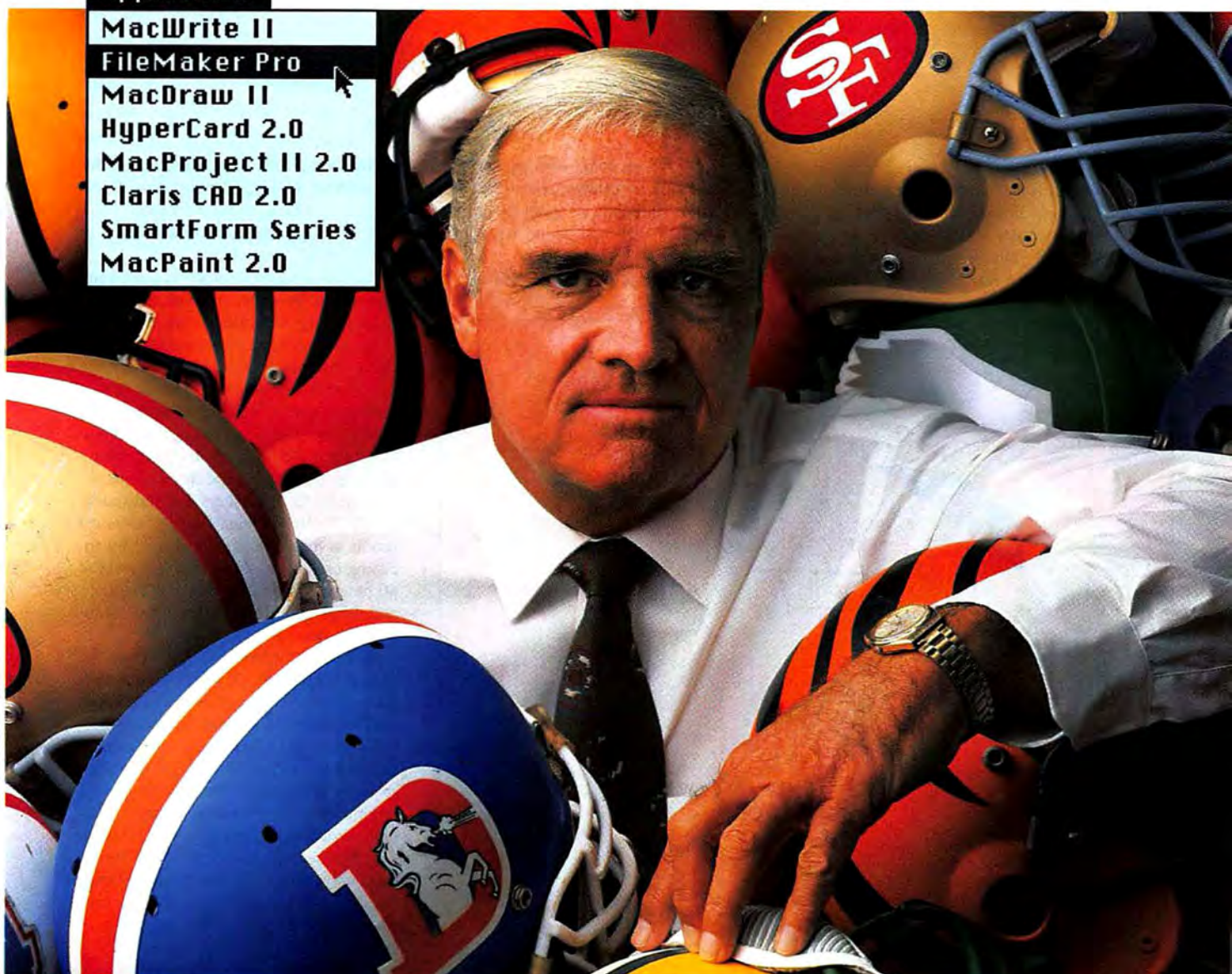
HyperCard 2.0

MacProject II 2.0

Claris CAD 2.0

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## Story

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What's going to be hot when it's time to compile the best of 1991? At the end of the special Eddy coverage, you'll find a list of the products we think will be some of the leading contenders for next year's awards. Of course, in the hyperchanging Mac

market, you can count on a few surprises, a few upsets, and a dark horse or two. Here are a dozen predictions about the products and trends that will shape next year's Eddys:

1. A big factor will be System 7.0:

Products that fully exploit its capabilities — such as interapplication communications — are likely to be standouts.

2. Work-group products will come of age in 1991.

3. Products that incorporate sound and video will provide quantum jumps in functionality and productivity.

4. Although other business-software categories may be reaching maturity, the spreadsheet category will reemerge as a real horse race, with relational-database-like capabilities, multidimensionality, natural language querying, sound, and problem-analysis features generating excitement.

5. Software publishers will rediscover the 80/20 rule: Expect a flurry of low-cost products that keep things simple by focusing on the core functions that you use 80 percent of the time, leaving the high-end 20 percent to specialized, premium-priced products.

6. Color printers will dip below the magic price point, at which time they'll become affordable and essential components of every Mac work group.


7. Storage capacity will continue to surge. By the end of the year, the high-capacity desktop will be able to choose among 20-or-so megabyte floppies, low-cost removable cartridges, or 100-or-so megabyte 3.5-inch optical discs. Simultaneously, hardware- and software-based compression solutions will allow you to squeeze more out of every megabyte of data storage.

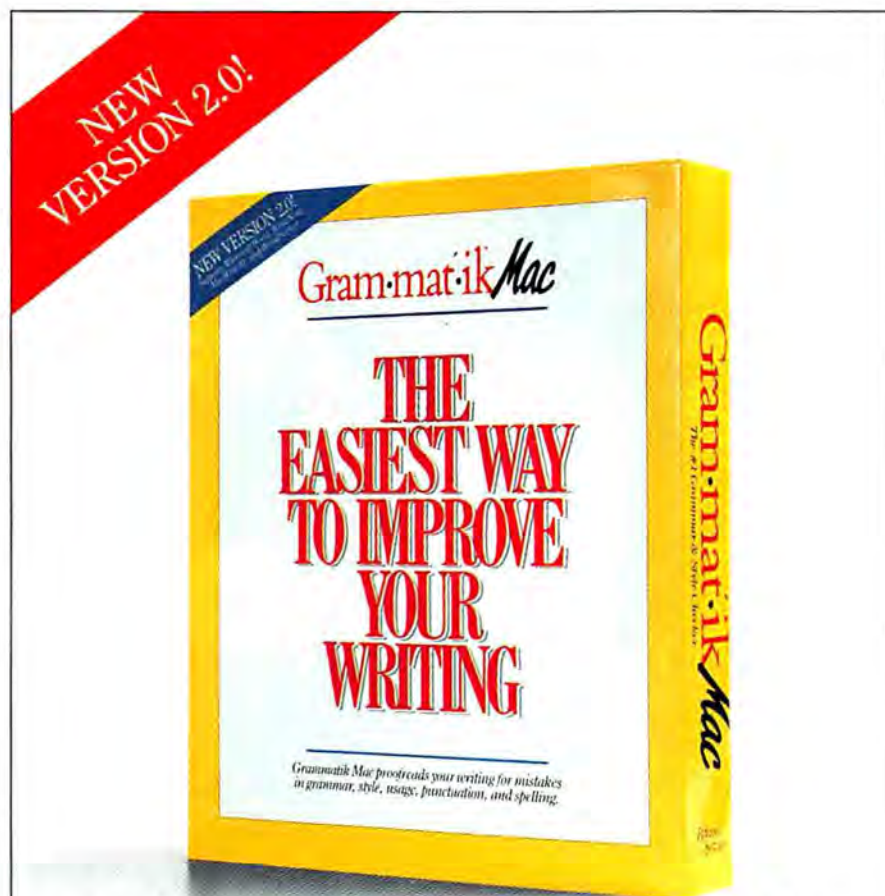
8. Miniaturization technologies will transform more desktop peripherals into portable accessories.

9. Computer networks will finally begin to truly merge with the established low-tech — and even "faux-tech" — components of the information infrastructure of American business, such as the telephone networks and the U.S. mail.

10. The social and political dimensions of computing will affect the products and sales channels. Everything from copyright laws to health and safety ramifications will have an impact on what kinds of products you buy — and from whom.

11. The paradox of centralization and decentralization will continue: As higher-powered CPUs and lower-priced peripherals will bring more power to the individual desktop, the competitive edge provided by networking your Mac to other Macs and other platforms will lead to increasingly higher levels of connectivity.

12. The Mac marketplace will continue to be as unpredictable as ever. 



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# The Perfect Portable



**In the recurrent bragging wars between Mac mavens and DOS diehards, the Mac side has usually had the Force with it — with one weighty exception: portable computing.**

**F**or reasons that have never been adequately explained by anyone, whenever two heavyweight technologies do battle in the world of computing, lines are drawn in the silicon and wars of words that are almost religious in nature are fought.

The most widespread example, and one in which most of us have participated, is the debate of the merits of the IBM PC versus those of the Mac. How many times have you heard put-downs of the Mac as “just a toy” or “just a fad,” even now that it’s become established as a business computer?

Or perhaps you’ve observed (or even participated in) the flame wars on CompuServe (one of the few places where Mac and PC zealots commingle in large numbers). Each side “flames” (leaves long, almost preachy messages) at the other, accomplishing nothing except to inflame similar responses. If you’ve been a Mac expert for a while, you probably remember when such arguments were practically a way of life.

Over time, though, the hostilities have subsided. Although there have been occasional flare-ups, such as the brouhaha incited by the teacher who claimed that Macintosh users were less literate than PC users (an assertion that is far from being proven), most of us thought that the war had been declared a draw or that it had at least become a cold war.

Then came Microsoft Windows 3.0, the latest version of the GUI (graphical user interface) for DOS, which is so similar to the Mac interface that Apple sued Microsoft over its look and feel. While Apple and Microsoft met in court, the factional fighting began anew, with the DOS diehards declaring they now had all the advantages of the Mac and none of the disadvantages. This was, of course, nonsense, as many columnists (including me) were quick to point out. So even if the conflict subsides, it’s never completely finished.

## **Advantage, DOS**

There’s one battleground in the war between Mac and DOS, though, where the PC people have always had a big advantage over the Mac folks, and that’s in the area of portable computing. The DOS devotees have had this advantage for some time too, as DOS laptops are relatively old, in computer time. Mac users have only one official model to choose from — the 16-pound Macintosh Portable (a.k.a. the DynaBrick) — and even that product is of fairly recent vintage. The Mac people have also

seen some interesting hacks, such as the DynaMac, the Colby, and the Outbound. These all have their supporters, but they don’t offer the range of features that the DOS folks get to choose from (especially in that all-important area, price). By contrast, the DOS diehards have dozens of selections available to them from a variety of manufacturers. These range from equally weighty Mac Portable-sized behemoths to the new 80286 and 80386 ultralight laptops.

Apple had its reasons for making the trade-offs it did in designing the Portable, and if you’ve ever used one, you were probably impressed with everything about it other than its size, weight, and price. I carried a Mac Portable during some extensive traveling a year ago, and it was just like having a real Mac with me, because, after all, it is a real Mac.

Of course, I was traveling with the ultimate Mac Portable accessory — a car. I wasn’t dragging the Portable through airports, so the weight wasn’t a big issue (although I did strain an elbow picking it up once). The weight is a big issue if you don’t have a table handy, as a Macintosh Portable sitting on your lap can very quickly start to cut off the circulation in your legs.

Over the years, many Mac users have been forced to consort with the enemy in order to compute on the road. DOS laptops such as the Toshiba 1000 were easy to carry and relatively inexpensive. Of course, there was that ugly command-line DOS interface and a lot of arcane commands to learn. But when there aren’t a lot of alternatives, you do what you have to.

Technology marches on, however, and two major advances in the DOS world have changed the playing field. The development of a low-power version of the 80286 has made super-lightweight laptops possible. Sharp and Texas Instruments put their heads together and came up with a 286 laptop with a backlit 16-gray-scale VGA display and a built-in 20-megabyte hard-disk drive that is smaller and lighter than a ream of paper (only 1.5 inches thick and less than 4.4 pounds!).

The 286 is important, because it means that this notebook computer can run the aforementioned Windows 3.0. Although Windows doesn’t make the Mac obsolete (as some of its adherents would have you believe), it sure makes using a DOS laptop a lot easier and opens up the laptop world to many Mac users who don’t want to learn DOS.



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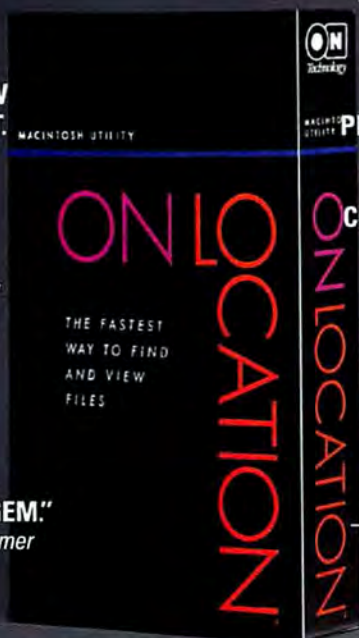
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## A 286 ultralight running Windows 3.0 is a reasonable facsimile of perfection.

### A Five-Pound Portable?

CompuAdd's MacAvenue division is even going so far as to bundle the less-than-five-pound 286 notebook computer with LapLink Mac so you can transfer files between the Mac and the laptop. To achieve a really usable system, you still need Windows, a mouse, and an add-on floppy drive for installing software and backing up (unless you're a real ace, I wouldn't try to get by with only LapLink and a SuperDrive in your Mac).

LapLink handles many translation chores; if you stick with the Microsoft programs designed for Windows — such as Excel and Word — and also use the Mac versions, moving back and forth between the machines is amazingly easy (although you'll learn why Windows doesn't quite turn a DOS machine into a Mac). LapLink also has its drawbacks, such as frequently translating files that you don't want translated.

Apple's still working on new portables. Rumors abound that by the time you read this (or shortly thereafter), a second portable will join Apple's product line. Some of the sexier rumors include the possibility of an Apple joint venture with Toshiba, a company that's well known in the laptop business and that has enjoyed a long relationship with Apple. Looking down the road, Apple's surely taking note of such incredible machines as the Poqet (a DOS machine the size of a Sharp Wizard that runs 120 hours on AA batteries) and thinking of ways to make real Macintosh computing more portable.

So we may yet see the perfect portable from Apple. But in the here and now, a 286 ultralight running Windows 3.0 is a reasonable facsimile of perfection, with advantages in size, weight, and price that far outweigh the disadvantages. If money's no object, you can even look at the 386 notebook computers (some with hard-disk drives holding up to 60 megabytes and still weighing less than six pounds) or perhaps buy a DOS notebook and a Mac Portable too. But if you can afford only one portable platform, try a DOS notebook running Windows. You may be pleasantly surprised. 



# MachOne



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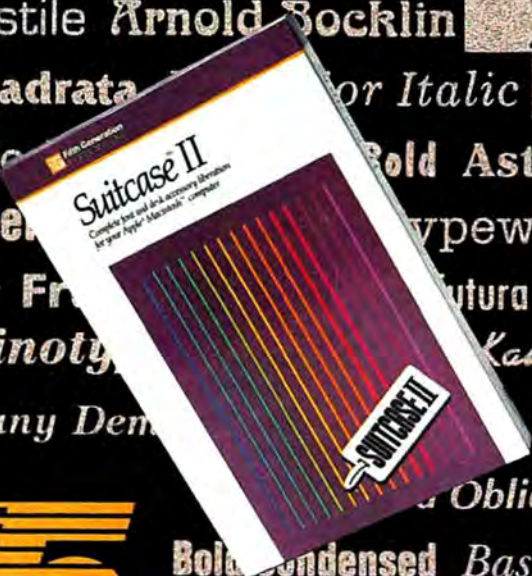
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# Don't Kvetch, Kick Butt



**Some say developers should quit writing Mac software for us, that they should instead give up and do Windows stuff. But *au contraire*, developers can do great with Mac software. They just need to learn how to hawk it.**

**S**oftware developers are in a tizzy these days. One half complains about how hard it is to penetrate the Mac market. The other half believes that it isn't worth penetrating, so they're going to Windows.

I don't agree with either half, but I care only about the first half. The second half can go to Hell.<sup>1</sup> This column is about ways in which small software companies can penetrate the Mac market — even today. It's also my own small contribution to helping break Microsoft's stranglehold on personal computing.

## The Press

Principle: Dealing with the press takes a rifle, not a shotgun, approach. There are only three publications — *MacUser*, *Macworld*, and *MacWEEK* — that developers have to worry about. (Maybe I should add *InfoWorld*, but its Mac coverage centers on proving that Windows will kill the Mac.)

The revelation that there are only three publications to cover has enormous impact. It means that developers don't need to spend \$25,000 on a party to impress 200 champagne guzzlers.

Three editors — Russ Ito of *MacUser*, Carol Person of *Macworld*, and Henry Norr of *MacWEEK* — are the most important press contacts developers can make. The best way to get to them is to call them and show them a product. This might cost a trip to the Bay Area and three lunches. (Henry Norr's favorite place to eat is the Rinconada Center.)

Although these three people are the most important, they focus on new-product announcements and reviews. There are other editors and writers who do lab-based comparison articles, feature stories, tips-and-tricks columns, and end-user profiles. The best strategy is to find a product champion from among the editors and writers by sending a copy of the product to every person on a magazine's masthead.

A personalized cover letter, press release, and the name of the company contact should accompany the product. After developers send

their products, they should follow up by calling each recipient. Many developers think that the box of software the postman dumps off will blow editors away so much that they will be compelled to write a story or column about it. Dream on. I haven't opened most of the software I've received this way.

## Distributors

Principle: A product gets the level of distribution it deserves. Large, successful software companies that want to gobble up developers ("acquire your product") and high-priced marketing consultants would have developers believe that "distribution is impossible to get these days." Hogwash. It's not impossible if a developer has a hot product. Let me explain.

Products such as PageMaker, Word, and Excel are commodity items. Every distributor (a distributor buys products from developers and resells them to dealers) has to carry them, which means that everyone competes on price. Hot new products are not commodity items, so for a while, distributors and dealers can make a lot of money on them. Thus a product can be desirable even if it's not from a big vendor.

Just as there are only a handful of magazines, there are a handful of distributors that matter. Really, there are only two: MacAmerica and Ingram/Micro D. So developers have to impress only two people: MacAmerica's Jack Kolk and Ingram/Micro D's Sue Harvey.

The same rifle approach works on distributors: Call them up, tell them about the product, and go show it to them. If a product is hot, they will fall over themselves trying to acquire it.

## Dealers

Principle: Concentrate on end-user pull, not on dealer push. Should developers try to go crazy and find, recruit, and train 3,000 dealers around the world? No way. Dealers sell the products that people ask for at their particular store. A developer's job is to generate crowds of people who ask for its products.

Frankly, most developers don't get dealer shelf space, because dealers have very little

<sup>1</sup>Speaking of Hell, have you heard about the Microsoft Windows programmer who died? He found himself in front of a committee that decides whether you go to Heaven or Hell.

The committee told the programmer he had some say in the matter and asked him if he wanted to see Heaven and Hell before stating his preference. "Sure," he said, so an angel took him to a place with a sunny beach, volleyball, and rock and roll, where everyone was having a great time. "Wow!" he exclaimed. "Heaven is great!"

"Wrong," said the angel. "That was Hell. Want to see Heaven?"

"Sure!" So the angel took him to another place. Here a bunch of people were sitting in a park playing bingo and feeding dead pigeons. "This is Heaven?" asked the Windows programmer.

"Yup," said the angel.

"Then I'll take Hell." Instantly he found himself plunged up to his neck in red-hot lava, with the hosts of the damned in torment around him. "Where's the beach? The music? The volleyball?" he screamed frantically to the angel. "That was the demo," she replied as she vanished.



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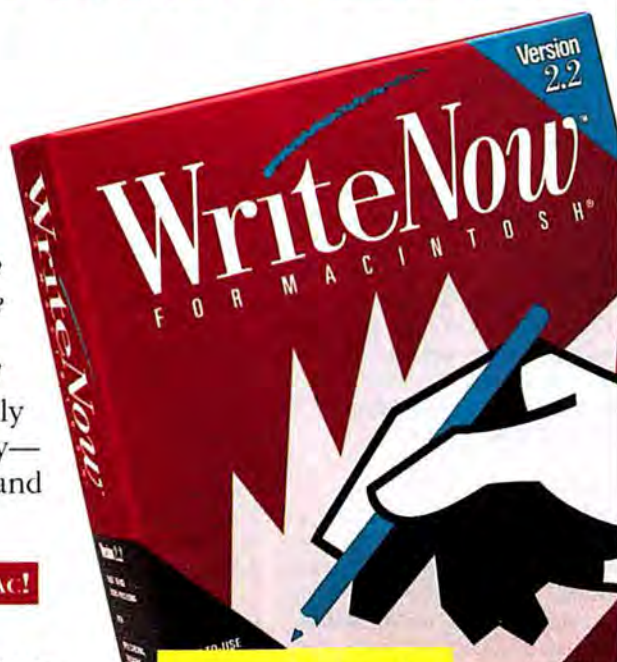
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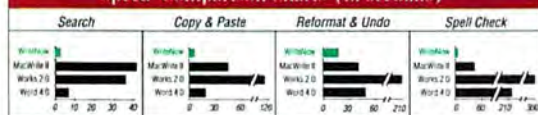
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\*For users with constrained disk space, WriteNow ships with a smaller 50,000-word dictionary. A smaller 470,000-word thesaurus is also available from T/Maker Company. All tests performed starting with a 12 page text document on a Macintosh Plus with a 20 megabyte hard disk. Full repagination performed when necessary. © 1990 T/Maker Company. All rights reserved. The following are registered and unregistered trademarks for the companies listed: WriteNow is a trademark of T/Maker Company; Macintosh, Apple Computer, Inc.; MacWrite, Claris Corporation; Microsoft, Microsoft Corporation; Grammatik is a trademark of Wang Laboratories, Inc. Licensed exclusively to Reference Software International. Reference Software is a trademark of Reference Software International.

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shelf space to give. This is OK, because most Mac software is sold through mail-order companies anyway. If developers can convince MacConnection, MacWarehouse, and MacAvenue to carry their products, their distribution is set. If developers can get Egghead, then distribution is truly done and they can concentrate on generating demand.

Before I antagonize every dealer, I'd like to mention that there is a handful of stores that sets the trend for the nation. They include ComputerWare in the San Francisco Bay Area; Northshore Computers in Milwaukee; MacEmporium in New York City; and MacUniverse in Los Angeles.

ComputerWare in particular is a good test: If ComputerWare can't sell your product, no other dealer will be able to. The cheapest market research a developer can do is to call up the Palo Alto store and ask to speak to Yuji Honma. If he thinks your product will sell, it will sell.

## User Groups

Principle: Help friends first. If you've been reading my column for a while, you know I love user groups. There's something touching about people who band together to improve people's Mac computing experience for no compensation.

These groups are developers' friends. One of their primary purposes is to disseminate information, and developers have information — about their new products. This is a perfect match, yet most developers do not work user groups. Many developers think that user groups are a bunch of crabby people who sit around complaining. In fact user groups are a medium more powerful than most Mac magazines.

Therefore, developers need to get off their derriere and work with user groups. Every developer should send every Mac user group a review copy of the product; 50 brochures and fliers; and a free perpetual subscription to any company newsletter about the product. One more thing: Every developer should visit every major user group to do a demo at least once a year.

I'll put my money where my mouth is. If you want a database of the kinds of Mac contacts I've mentioned, contact me and I'll send you a copy. It's for the common good. Get out there; kick some butt. The Mac community will love you for it.

[Editor's note: Guy's database is also available on Zmac. In Library 7 (Reference) of the Download & Support Forum, download GUYDB.SIT.]





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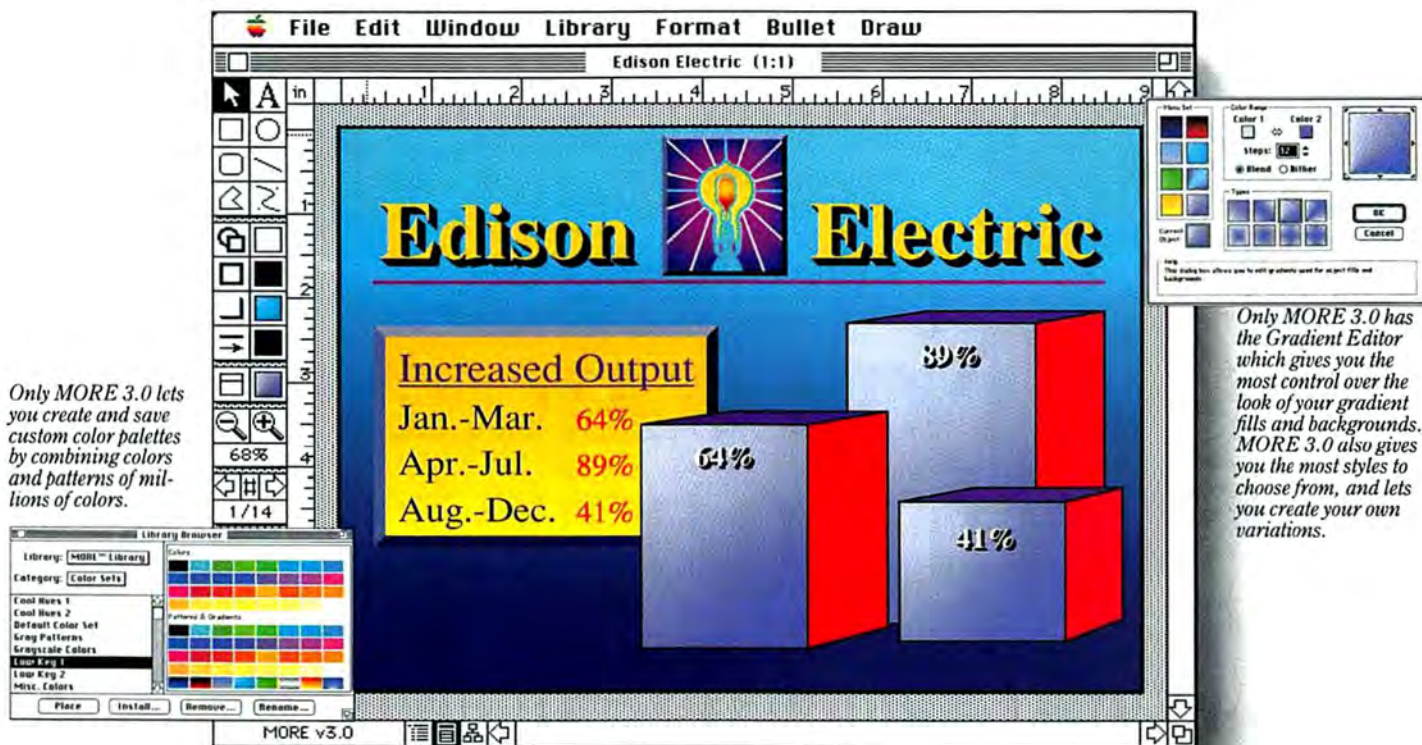
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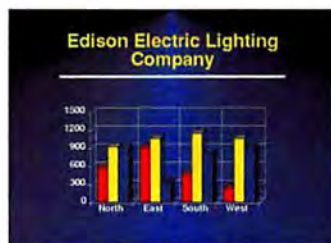
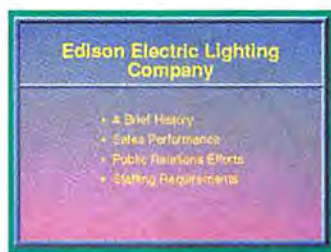
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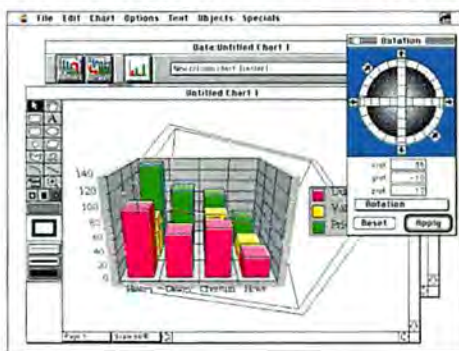


## NEW ON THE MENU

*Computers do a fine job of creating charts, but they're pretty useless once the data has been plotted and printed. What's needed is the equivalent of OCR for charts. FlexiTrace is precisely that; it lets you extract the data from a scanned chart. FlexiTrace promises to do for charts what OCR has done for text — let your Mac read. Tree Star, 1802 Hillside Road, Santa Barbara, CA 93101; (800) 366-6045. \$249.*

**By Russell Ito**

**About face:** Computer interfaces are like touchdowns in football — change their value, and you change the entire nature of the game. Every change to an interface changes the way users work with data, and the more control users have over their data, the more sophisticated their needs become. The Mac has achieved its success largely because of its consistent user interface, but now that the Mac has reached maturity, things are changing. Even the Mac's interface isn't inviolable anymore. ☐ Three-dimensional graphics push the limits of the Mac interface more than any other type of data. Because the screen and the mouse are 2-D devices, applications that require a third dimension have to invent an interface to handle it. GraphMaster, from Visual Business Systems ([404] 956-0325) is a new charting and graphing package that lets users control 3-D plots live instead of through a dialog box. Although most applications use a wire-frame model in a dialog box to show rotation, perspective, and projection, GraphMaster superimposes an actual-sized wire frame on top of the chart, so users can see their changes. It's a



simpler, more direct way of working. ☐ If you take a 3-D model and give users the ability to move randomly through it, you have virtual reality. Virtus ([919] 467-9700) is the first publisher to bring virtual reality to the desktop. Imagine being able to move left, right, forward, backward, up, and down or yaw or roll through a model at will. Now imagine doing so by using a mouse on a flat surface. Virtus WalkThrough manages to finesse its way around the problem by using modified clicks, but what's really needed is a true 3-D pointing device. ☐ The more we expect of our Macs, the more pressure we put on interface designers to make it happen. So the next time you're confronted with a "non-standard" interface, don't curse. You may be getting exactly what you asked for.

### Up to Date . . .

**Digital Darkroom**, Silicon Beach's gray-scale photo-retouching package, has finally reached version 2.0. New features include colorization; image, scanner, and printer calibration; and real-time transformations. \$395. (619) 695-6956. ☐ **DiskFit**, SuperMac Technology's backup program, is now in version 2.0. Enhancements include unattended backup and more selection filters for backing up files. \$99.95. (408) 245-2202. ☐ **Correct Grammar** version 2.0 adds style checking to the top grammar checker. \$99. (415) 541-7864.





**The Radius Pivot for Built-in Video lets Mac IIs owners make the turn without a video card.**

## A Pivot Without a Card

As we noted in our review (August '90, page 55), the Radius Pivot is a good monitor choice if you need flexibility, but for Mac IIs owners, losing the machine's only slot for a video card practically cancels out the versatility factor. Recognizing this, Radius has turned the video card into software. The Pivot for Built-in Video lets users connect the monitor directly to the Mac's internal video, which keeps the machine's only slot open for other uses. The pivoting function works just as it does on the original Pivot, and the monitor's redraw speed is nearly identical.

Radius, 1710 Fortune Drive, San Jose, CA 95131; (408) 434-1010. \$1,295.

## Excel Strikes Back

Compared with Full Impact and WingZ, Microsoft Excel — even version 2.2 — was starting to look pretty long in the tooth. But it appears that Microsoft may have been listening after all. Excel 3.0 brings the market leader — make that "market owner" — at least even with, and perhaps slightly ahead of, its competition.

Microsoft has added a tool bar that's similar to the one in Full Impact. You can set data formatting and alignment by clicking on icons instead of by using dialog boxes and menus. Style sheets have been added for faster and more consistent text and number formatting. Cell notes are now indicated by a marker in the cell, and word wrapping within a cell is now available as a formatting option. You can also view Excel spreadsheets as outlines, with the detail between summary rows collapsed.

But Excel's biggest improvements are in its charting and presentation functions. Charts can now reside on spreadsheets themselves, and the number of chart types has been increased to 68, including a range of 3-D charts. Up to 16 customizable colors are available, and a full drawing layer has been added, so you can embellish your charts as necessary. Excel 3.0 can also use pasted graphics as its chart units, either stacking or stretching the graphic to match the data. And as if that weren't enough, the new Excel can even help you fudge your data: You can specify a desired result and then tell Excel which cells to doctor, or you can simply drag a chart value and the

spreadsheet will update appropriately. Excel 3.0 should start shipping in the first quarter of 1991.

Microsoft, One Microsoft Way, Redmond, WA 98052; (206) 882-8080. \$495.

## Keeping Your Versions Intact

Computers make changing documents easy, but usually at the expense of previous versions. Sitka Versionary is a background utility that automatically saves a specified number of previous document iterations so you can quickly go back to an earlier version. An INIT/DA combo, Versionary lets you specify which applications or folders it should "version," where it should store its files, and whether or not it should compress them (it uses the DiskDoubler technology). Once you've set it up, you never have to see it again.

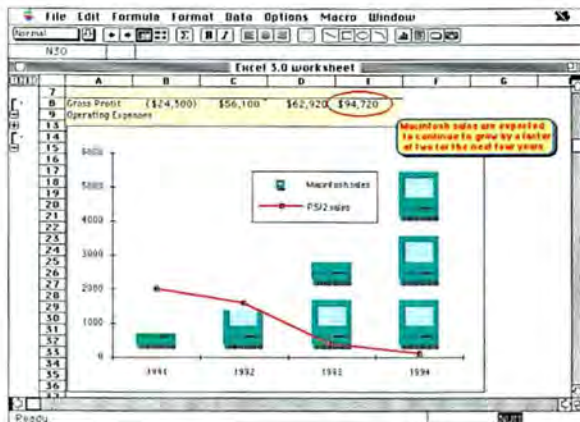
Although Versionary keeps its versions on a single level, you can color-code your versions to stay organized. To help keep its activity to a minimum, Versionary kicks in only once per "edit session," which means either when you close a document or quit from an application (the distinction depends on the application). Because Versionary's versions are saved in their native formats, you don't need Sitka's product to open them, just the creating application. Versionary should be available in the first quarter of 1991.

Sitka, 950 Marina Village Parkway, Alameda, CA 94501; (415) 769-9669. \$139.

## Microsoft Mail 3.0 Delivers

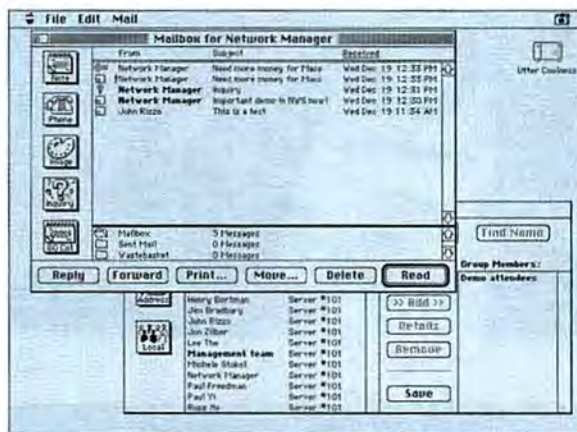
Having been beaten to the punch by CE Software's QuickMail the last time out, Microsoft has landed the first blow this time around. Microsoft Mail 3.0 is a major upgrade that on first look seems to put Microsoft in the lead among E-mail vendors. Mail 3.0 boasts several user and work-group enhancements.

It now supports multiple file enclosures; the only restriction on the number of files is a limit that the network manager can set. Double-clicking on a folder adds all the files in that folder — even if there are folders within the folder — and shows the number of files being attached to the message. Actual folders can't be transmitted, which prevents someone from accidentally sending a folder containing a huge number of files. Users can set up personal address books and groups, and



**Excel 3.0's biggest improvements are in its charting functions. Charts can reside on a spreadsheet, and chart types can include 3-D charts and USA Today-like picture charts.**





Microsoft Mail 3.0's new features include the abilities to set up personal address books and groups and to send an unlimited number of enclosed files.

they can compile personal address books automatically simply by sending mail; the program keeps track of the addressees automatically. If you want to exclude or add some group members, Mail 3.0 lets you make those changes on the fly, without permanently altering that group. Messages can be put into folders, and storing messages is just a matter of a click-and-drag. Mail records can be kept, and when saving messages as text files, users can opt to append messages to a single file.

To improve the package's performance, Microsoft has incorporated several basic changes into Mail 3.0, including push notification and optional directory propagation. Microsoft has also addressed other administrator issues, including improved security, automatic server backup, and the ability to collect global server or traffic statistics from any station.

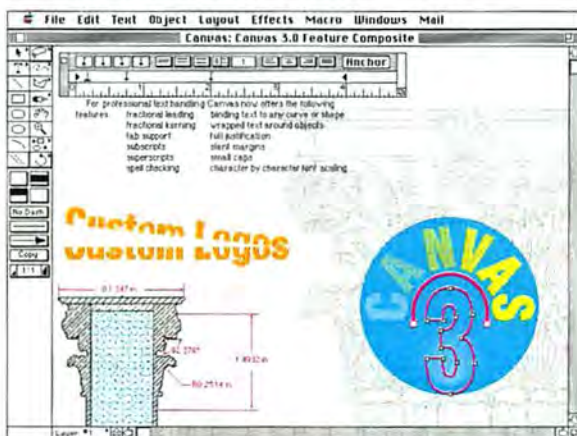
Mail 3.0 should be available in the first quarter of 1991.

Microsoft, One Microsoft Way, Redmond, WA 98052; (206) 882-8080. Mail Server, \$395; Mail 5-Pack Workstation, \$395; Schedule+ 5-Pack, \$175.

## Canvas Charges Ahead

Following close on the heels of Illustrator 3.0 as well as of the announcements of FreeHand 3.0 and MacDraw Pro, Canvas 3.0 now joins the ranks of significantly upgraded drawing programs. The new Canvas boasts more than 50 new features, but its biggest improvements are in its text handling, the addition of Pantone colors, enhanced Bezier curves, several new CAD features, and support for Deneba's plug-in tools first seen in UltraPaint. Canvas' text functions now include true tabs; superscripting and subscripting; fractional leading and kerning; text on a curve or shape or around an irregular object; slant margins; and character-by-character font scaling. CAD features include user-definable parallel lines or curves, dashed curves and objects, rotation around any point, and an intelligent drafting assistant. Canvas 3.0 should be available in the second quarter of 1991.

Deneba Software, 3305 N.W. 74th Avenue, Miami, FL 33122; (305) 594-6965. \$395.



Canvas 3.0 keeps pace with its competition. This version includes better text handling, some CAD features, and an open architecture.

# NewsLine

## Reports and Analysis

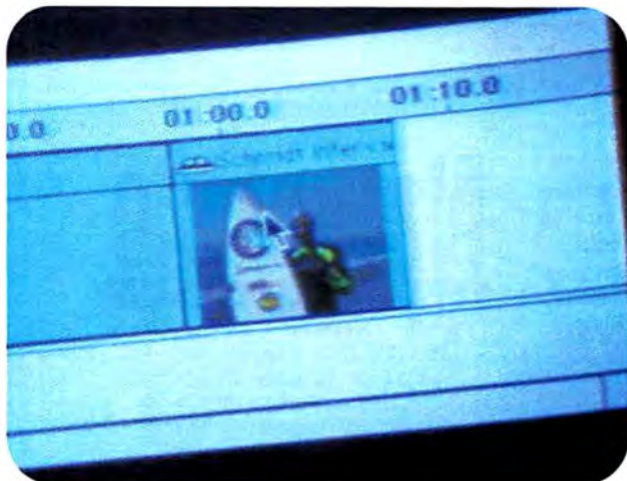
### Farallon Networks with Apple

EMERYVILLE, CA — Farallon Computing and Apple Computer have signed a long-term licensing agreement under which Farallon will take over the marketing and development of Apple's AppleTalk networking products for DOS and Windows (that is, Intel-based computers). Farallon will sublicense the technology to several other manufacturers as well. As part of the agreement, Farallon will acquire two products from Apple: the PC LocalTalk card and AppleShare PC software. The card will be renamed the PhoneNet Card for LocalTalk and will be shipped complete with software and all necessary hardware for \$249. AppleShare PC will be renamed PhoneNet Talk Software, and it will include the AppleTalk PC protocols, AppleShare PC client, and printing software for printing to AppleTalk printers. Because the software is platform-independent, it will run on a variety of networks — including LocalTalk, token ring, and Ethernet — and Farallon plans to pitch AppleTalk as an ideal solution for networking PCs at a minimal cost. According to Farallon, Apple chose Farallon over Claris Corp. because of Farallon's experience with networking products.

### Apple Takes a RISC

CUPERTINO, CA — Planning for the future, Apple Computer has joined VLSI Technology, of San Jose, California, in a joint venture with a British company, Acorn Computer, for the manufacture of a new RISC chip. Apple has invested \$3 million in the \$10 million venture, which will operate under the name Advanced RISC Machines Ltd. The current Acorn chip, called the Acorn RISC Machine, or ARM, is tied with Sun Microsystems' SPARC chip as the most widely used RISC microprocessor. At present, the ARM is mostly used as a processor in laser printers and as a dedicated coprocessor. Apple had generally been expected to use Motorola's 88000 RISC microprocessor for any RISC development, but researchers within Apple reportedly began investigating the Acorn chip as early as mid-1988. Apple is, however, now expected to choose Motorola's 88110 RISC chip for any RISC-based CPUs. If this happens, the Acorn chip will probably be used as a laser-printer processor or as a graphics accelerator.





# GUESS WHAT DESKTOP P

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Imagine if you could interview a customer on your own camcorder. Then cut to, say, a product shot. Overlay some animated text. Add a voice-over or maybe some background music.

And then, as if that weren't enough, print it all to videotape so you could show it on any VCR.

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It's what we call Desktop Video Publishing. And it's now possible with MediaMaker.™

The first software that lets you produce a video as easily as you publish a page.

For starters, MediaMaker pulls together all the different media you've chosen. Like graphics, Mac sounds, CD audio, animation and video clips.

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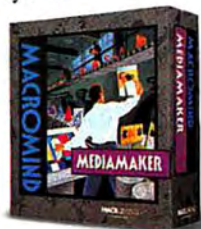
# COMES AFTER PUBLISHING.

so you can be sure everything is in sync.

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Note again the word videotape.

Never before has it been possible to print to video. To actually create a walking and talking sales brochure. Or educational guide. Or training manual.



All humility aside, we think it's the next revolution in desktop communication.

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Plan to be amazed. After all, revolutions like this don't come along every day.

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*the multimedia company*



## DATABASES

## FileMaker Pro

**It's no speed demon, but FileMaker Pro is still an excellent choice.**

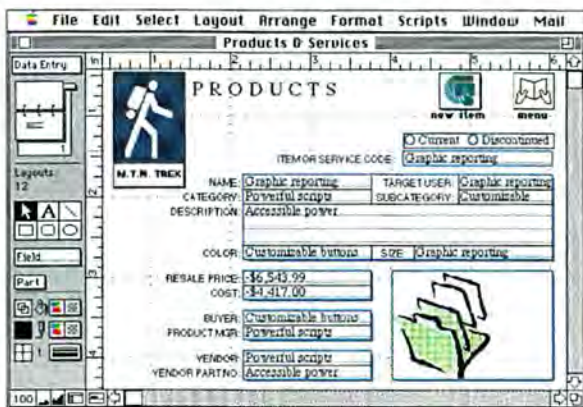
FileMaker Pro is the first upgrade the best-selling FileMaker II database program has seen in two years, and it's just in time. This flat-file manager was beginning to show its age. FileMaker Pro now keeps pace with its more powerful cousins, the relational-database programs such as 4th Dimension and Omnis 5, by offering a host of new features and an easier learning curve at half the cost (or less) in time and money.

## The Big Easy

FileMaker's ease of use raised database management out of the black art of programming and brought it into the hands of average users. Creating a database in FileMaker Pro is just as simple. You define fields; give characteristics — text, number, date, calculation, and the like — to your data; and create layouts for entering, viewing, and/or printing. You can be up and running with a simple contacts database in ten minutes — less if you choose to use one of the six templates included in the package.

The most striking difference between FileMaker II and Pro is in the layout area. It won't wow desktop publishers, but there's a lot more than there was before. Defining a new layout is effortless. FileMaker Pro guides you along the way by automatically generating certain types of layouts — lists, labels, and envelopes, for example.

You can also use Pro's new graphics tools to create layouts that are more visually appealing. Among the new features is greater support for objects. You can group and layer objects with the sorts of commands you would expect from the publisher of MacDraw. Better alignment guides give more accurate positioning. Color is supported for fills, rules, and type. Only 81 colors are provided, and Apple's Color Picker, which would give you more, is not supported. One workaround is to experiment with combining colors and patterns to get different shades from the primary colors. You can also choose to



FileMaker Pro is a major upgrade of the Mac's most successful flat-file-database program. The new layout area adds color and better positioning plus the standard drawing tools we've come to expect from MacDraw.

import or paste graphic images.

FileMaker's networking scheme does not require a server. You just open a FileMaker file on any station in a LocalTalk network, and every other Mac on the network can access it — a good solution for small offices, since no dedicated host machine is necessary. FileMaker Pro adds a new feature that permits networking a database across LocalTalk zones, which makes the program an asset for large offices too.

Another important new feature is workgroup capability. You can set levels for user access and assign passwords to govern those levels. Fields can be defined as view only or made inaccessible to certain users. If you want a group of users to enter data but not modify existing records, that's also possible.

The original FileMaker eased the way for data entry through formats and lists. Pro has added better default formatting for numbers, dates, times, pictures, and text. For example, you can set a number format so that when you type 1850, the number is converted to \$1,850.00.

If the values for a certain field can be narrowed to a defined list, FileMaker Pro lets you display that list as check boxes or radio buttons as well as on a pop-up menu — the latter was available in FileMaker II. FileMaker Pro can also automatically enter data — such as a sequential list of numbers, the current date, and the name of the last user who modified a record.

Scripts help ease user interaction by automating a group of commands. For instance, you might switch to a layout, find a subset of records, sort them alphabetically, print them out, and then return to the original layout — all with one command. Scripts can be activated by a menu choice or by a custom button you've added to your layout.

Buttons, a new feature, give FileMaker Pro a HyperCard-like feel — not surprising, as the two products come from the same company. Buttons can also issue a specific command, such as Go to Next Record, or switch to a different layout. FileMaker ships with a variety of useful predefined buttons.

## Relational-Lite

FileMaker is "relational-lite." It doesn't have the full functionality of a relational-database program, but it goes halfway. The power of a relational-database program is in its ability to connect two or more sets of data. For instance, in a product database, you might have several products from one company. Instead of retyping the company address and phone number every time you create a new product record, you want the product "related" to a pre-existing companies file, so that information is entered automatically. FileMaker Pro uses lookup tables to simulate a relational function. When you change information in the companies file, it isn't automatically reflected in the products database, as it would be in a relational-database program.

Lookup tables work the same way in Pro as they did in FileMaker II, and Claris would do well to enhance this feature in future releases.

FileMaker Pro takes on an expert's edge when it comes to functions. These routines range from the simple (sum, average, date) to the complex (cosine, logarithms, radians) and also include some text-based functions that specify such things as length and lowercase letters. Building an equation is a point-and-click operation involving lists of the available values, operators, and functions. As many small- to medium-sized businesses have already discovered, these calculations are



more than enough for running a decent inventory and invoicing system.

Clarix has tweaked FileMaker across the board, including better script handling, field definition, importing, and exporting. Just about every major function has a slightly different look and feel — for the better in all cases. For instance, when you import data, you can actually view records to see that their fields will be filled properly before you begin what can be a lengthy process.

Another nicety is the addition of a spelling checker. The spelling checker corrects errors in batch mode or as you type. If you use MacWrite or other Clarix applications that have a spelling checker, you can share dictionaries.

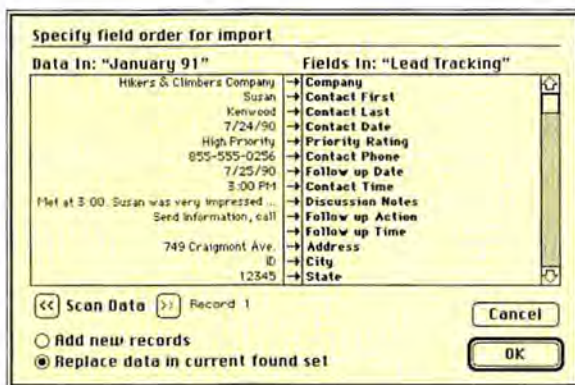
### Not Exactly a Speeding Bullet

With more than a hundred new features, FileMaker Pro is double the size of FileMaker II. That power comes at a price, however. Pro is slower on SEs and Pluses than FileMaker II is. This is unfortunate, because the installed base for upgrades probably includes a lot of these CPUs.

Not surprisingly, on any machine with a 16-megahertz 68030 processor, Pro performs much better. Tests that used a IIci to import and export data indicated that Pro ran at about the same speed as FileMaker II. It wasn't lightning fast, but for those functions, it didn't be. Sorting data with Pro was nearly twice as fast as with FileMaker II, but Pro is still significantly slower than 4th Dimension at both searching and sorting. Using the Find command yields nearly instantaneous responses in both FileMaker programs.

Whenever Clarix has taken over a good product, as it did two years ago with FileMaker, it's somehow missed the mark in updating the program — witness the initial upgrades of MacPaint, MacWrite, and MacDraw. FileMaker, unfortunately, is no exception. It's the victim of poor beta testing. Numerous bugs plagued the initial release, although Clarix said that all would be fixed by the time you read this.

The biggest pitfall is in converting FileMaker II databases for use in FileMaker Pro — a process that has led some users to dub the program FileBreaker. The problem, however, isn't with Pro but with FileMaker II. It turns out that a minor bug in FileMaker II becomes a major-league problem when a II database turns Pro. It has to do with the way records are indexed. Invalid addresses are created for some records, which can lead to crashes and



FileMaker Pro has a unique import scheme that lets you preview the data and make sure the right information will be imported into the correct fields before you begin the import. This can save you a lot of time by preventing errors in what is usually a lengthy process.



FileMaker Pro comes with a template of predefined buttons that can give your layouts a HyperCard-like look that can simplify and speed up your data handling.

data corruption. The solution is simple. Just compress the database (using the Save As command) in FileMaker II before converting it. Astonishingly, the initial release of Pro lacked instructions on how to convert a database.

Several other bugs bit the initial release of FileMaker Pro. Again, Clarix said these would be fixed. Among the most notable were the inability to print on DeskWriters or GCC Personal LaserPrinters and hairline rules printing as 1-point rules. The bug-fix version (scheduled for January 1991) is free to registered users, but you must request it.

The manual and HyperCard on-line help are adequate. There are some errors, but Clarix has been quick to admit to the problems and include an addendum in its packages. Its on-line support — on CompuServe (in the MAC A VENDOR Forum) and America Online — is very responsive. Clarix tech support has collected the answers to frequently asked questions, plus undocumented tips and hints, and posted them on-line in a FileMaker Pro database, which is available on Zmac, the on-line service for MacUser and MacWEEK.

### The Bottom Line

FileMaker Pro is ideal for first-time users and has enough power to run sophisticated applications. It does about 90 percent of what relational-database programs do, without a heady investment in resources — an important consideration in the budget-conscious '90s. Even with its problems, FileMaker Pro is still the best flat-file manager available for the Mac. Designing a database is a snap, and working with one requires little training. If you're a novice at databases, go with FileMaker. You'll turn Pro in no time.

— Ben Templin

### Get Info

#### FileMaker Pro

★★★★½

**Published by:** Clarix, 5201 Patrick Henry Drive, P. O. Box 58168, Santa Clara, CA 95052; (800) 544-8554.  
**Version:** 1.0v1.  
**List Price:** \$299.



## UTILITIES

# Norton Utilities for the Macintosh

**When it comes to rescuing a crashed disk, Norton Utilities is the best.**

If your hard disk has ever crashed, you know the feeling of despair that overwhelms you when you realize what's happened. If your hard disk has never crashed, you can count on having this experience. Recently a spate of packages aimed at data and disk recovery has arrived on the market. MacTools Deluxe (Central Point), 911 (Microcom), SUM II (Symantec), and now Norton Utilities all take different approaches to the problem. Of the bunch, however, SUM and Norton Utilities should be your first choices. Whereas SUM is focused more on data preservation in general, including, as it does, a backup module, Norton Utilities' approach is more clearly focused on disk maintenance and improved performance.

## The Doctor Is In

The NDD (Norton Disk Doctor) is the core of the Norton Utilities package. It analyzes and diagnoses a Mac volume. Once it knows what's wrong, it proceeds to fix it, if it can. This is the fundamental philosophical difference between this package and SUM: SUM recovers data from a sick disk; Norton Utilities tries to make the disk better first.

Once you've selected NDD from the main window, you select the volume and then start the scan; three clicks, and you're off. Each time the NDD finds something amiss, it displays a dialog box explaining the problem and offers the option of fixing or not fixing it. Unless you know what you're doing, you should always say yes;

the NDD's guesses are good. The NDD checks the integrity of the data structures on a volume and, in its final pass, checks each file on the volume for anomalies.

The speed with which the NDD scans a disk is notable. Larger disks do, of course, take more time, but spending a few minutes per day scanning your volumes to guarantee the state of your data is a small price to pay.

If the NDD is unable to repair the disk, it's time to recover your data and reinitialize it. Norton Utilities' Format Recover uses several approaches to recover as much of your data as possible. File Saver, an INIT/cdev, stores a copy of a volume's file system, keeps track of deleted files, and saves Finder Get Info comments, so that they're not lost when you rebuild your Desktop file. Format Recover looks for the File Saver INIT's files when it's trying to recover your data. File Saver is unobtrusive; you'll never notice it's there.

Unlike SUM II's Shield INIT, File Saver is extremely fast. If you've mistakenly initialized (not formatted) a volume on which File Saver's protection was installed, Format Recover can restore your volume's file system within a few seconds of a File Saver backup.

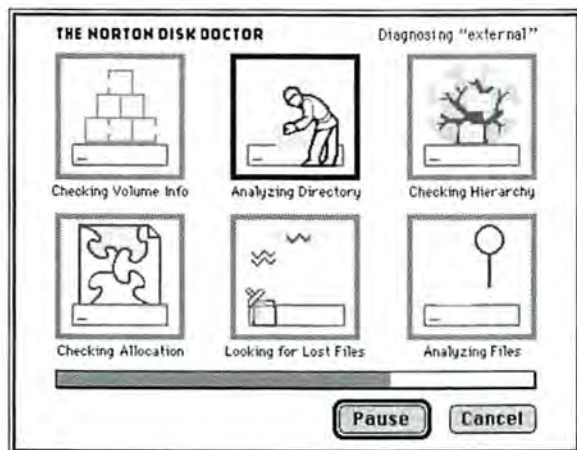
The only drawback with this scheme—and SUM shares it—is that you will probably lose the work you did since the last time File Saver saved the file system (for example, the last restart or shutdown or the last time you explicitly backed up the information from the File Saver cdev).

## Daily Enhancements

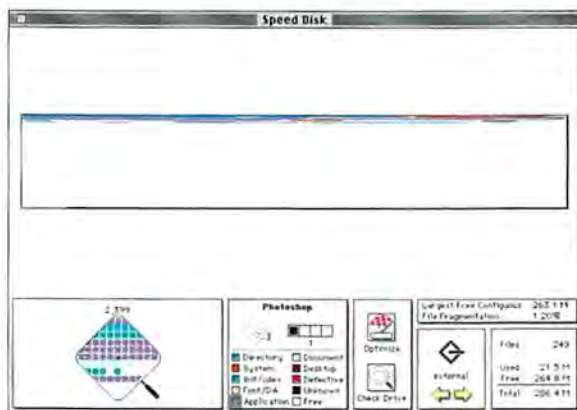
Aside from Norton Utilities' recovery capabilities, the package contains several utilities that make daily Mac operation faster. Speed Disk is a disk optimizer; it can analyze a volume and graphically display the distribution of files throughout the volume. It is designed to be as safe as possible to use and is supposed to be able to survive a power cut while optimizing a disk. This safety has a penalty, though: Speed Disk's optimizing speed is only average. On the other hand, safe and fast are mutually exclusive features in an optimizer.

Fast Find is a DA that is a replacement for Apple's File Find DA, but Fast Find is much faster. Searching through 100 megabytes of files takes roughly five seconds. You can search for files by name, type, or creator on multiple volumes.

Directory Assistance is an INIT that extends standard file-selection dialog



The Norton Disk Doctor is the heart of the Norton Utilities package. This screen keeps you posted on how much progress the Doctor has made in checking your disk. As it finds problems, the Norton Disk Doctor displays a dialog box asking whether or not you want to fix them.



The Norton Utilities Speed Disk displays the distribution of files across a volume graphically and informs you about the percentage of fragmented files on a disk. You can determine the whereabouts of a file on a volume by using the magnifying glass.



boxes. It adds a pop-up menu on either side of the standard volume-name pop-up over the file list. The View menu sets Directory Assistance to display files in the file list by name, date, or type and whether folders should be displayed before, after, or interspersed with files. The File menu lets you delete, duplicate, and get information on files; create new folders; and find files. The Find feature is particularly notable, because it uses the same fast-find technology as in the Fast Find DA.

The third application in the Norton package is Layout Plus, a new version of the shareware program Layout. Layout Plus lets you set Finder preferences, such as default window size and placement and default view (by icon, by name, and so on). What's unique about Layout Plus is that it works on a Finder open under MultiFinder; the only caveat is that changes take effect only after a restart.

The KeyFinder DA is another replacement for an Apple DA: Key Caps. KeyFinder displays the entire character set of the selected font; all you have to do is click on a character, and KeyFinder displays the needed keystrokes.

Finally, DiskLight is an INIT/cdev that displays a small hard-disk icon in a top corner of your screen. This is useful if you have an internal hard disk and can't see its activity LED.

#### The Bottom Line

The Norton Utilities package provides complete tools for protecting and restoring your data as well as several useful utilities that make using your Mac easier and faster. Anyone who manages multiple Macs or regularly recovers data should have every recovery package on the market for completeness' sake. For users who are thinking of buying only one of the recovery packages, Norton Utilities for the Macintosh is the one to get.

— Stephan Somogyi

## Get Info

### Norton Utilities for the Macintosh

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Published by: Symantec, 10201 Torre Avenue, Cupertino, CA 95014; (408) 253-9600.

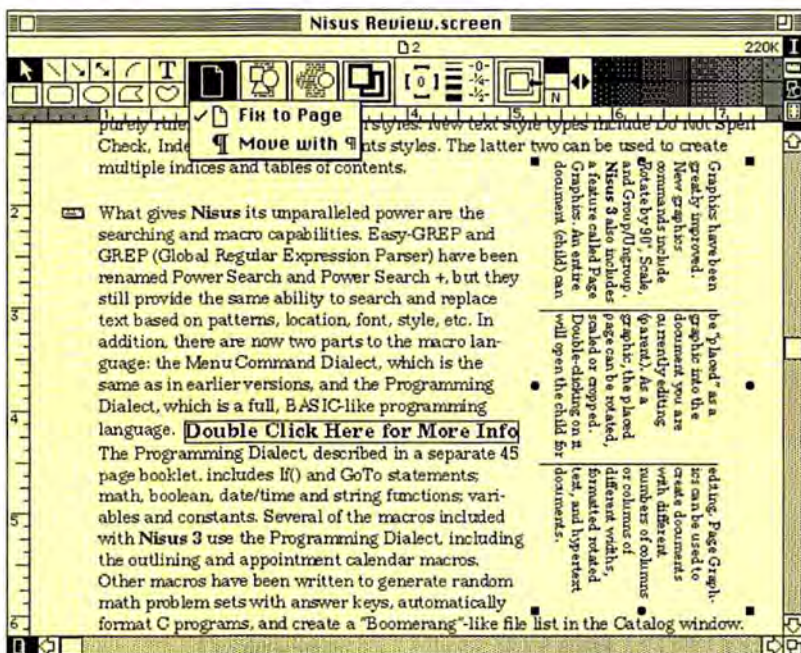
Version: 1.0.

List Price: \$129.

## WORD PROCESSORS

# Nisus

**With the addition of some substantial improvements, Nisus remains a contender at the top of the word-processing heap.**



Nisus is a high-end word processor with extensive text controls. The Page Graphics function allows documents to be placed in other documents. These documents can be cropped or resized and, if in a graphics layer, rotated and anchored to the page or paragraph. Double-clicking opens the "child" file for editing.

One of the advantages of being small is that you can move fast. Paragon Concepts has updated its high-end word processor, Nisus, twice since the program's introduction in January 1989. In roughly the same time period, Microsoft has yet to update Word 4.0 even once. Although Nisus 2.0's improvements were fairly minor, version 3.0 is a significant step up.

#### Looking Good

Many of the changes in Nisus are cosmetic: Menus have been more logically arranged, commands have been renamed for clarity, and the master ruler has been redesigned. There are also small but extremely useful additions, such as a vertical ruler, noncontiguous selection of text, and antonyms in the thesaurus.

A small yet handy addition is the

expansion of the allowable keyboard-command assignments. Nisus not only lets you assign keys in any combination with the Shift, Option, and Control keys but it also lets you assign multiple keystrokes. You may want to assign Command-G to execute the Display Graphics Palette command or Command-GI to select Get Info. Nisus determines whether multiple keystrokes are one or two commands, based on the amount of time between strokes. This feature lets you assign mnemonic combinations, such as Command-IH for Insert Header or Command-IF for Insert Footer, and still be able to use the standard Command-I for italic.

Nisus now uses mail-merge standards (in previous versions, Nisus' nonstandard mail-merging was done with macros). Its cross-referencing capability has also been



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## ASD Software, Inc. FileGuard

FileGuard offers complete access management control, allowing an administrator to hand out privileges to authorized users. It also enables you to write protect all folders, even your hard disk while keeping track of all activity.

FileGuard .....\$137



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## MicroTouch Systems UnMouse

The UnMouse does everything a mouse can - only faster, easier, and in less space. To move the cursor, simply slide your finger over the glass surface. To make a selection, merely press down.

UnMouse .....\$175

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Curator	75
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### Tactic Software

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### Timeworks

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### Zedcor Inc

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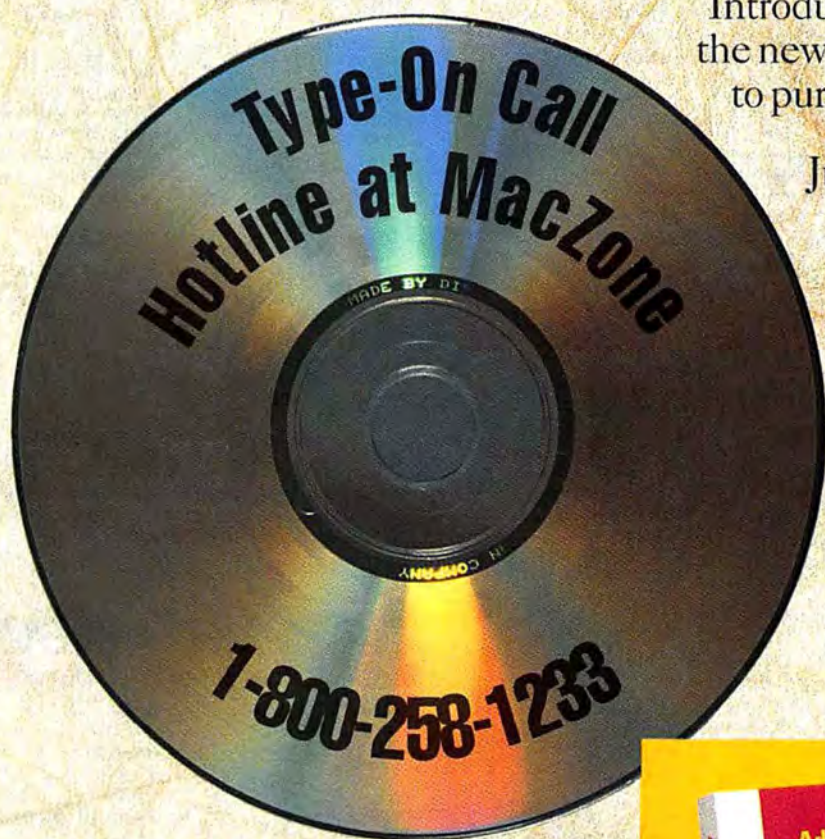
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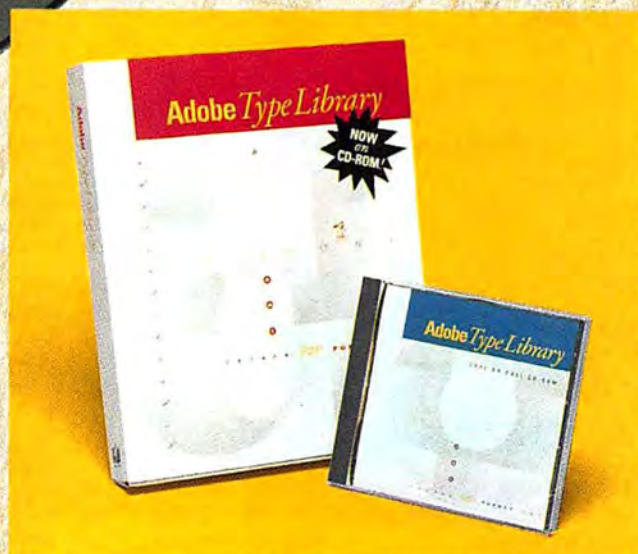
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### Activision

Cosmic Osmo CD ROM ..... 45.  
Manhole CD ROM ..... 33.

### Addison Wesley

Hypercard Script Language  
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### DataDesk

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### Farallon

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### Hyperpress Publishing

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### Hyperpress Publishing

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### Individual Software

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The USA Factbook ..... 75.

The CIA Factbook ..... 80.

Baseball Guide & Register ..... 138.

Vietnam Remembered ..... 69.

GEM - Public Domain ..... 75.

Funhouse CD ..... 37.

## NETWORKING & CONNECTIVITY

### Asante

MacCon+II E & IET ..... 340.

MacCon+II E ET 64Kb ..... 375.

MacCon SE E & ET ..... 275.

MacCon SE/30 E & ET ..... 340.

MacCon SE/30 64Kb ..... 375.

### Cayman Systems

Gator Box ..... 1,955.

Gator Share Software ..... 1,350.

Gator Card E/II ..... ea. 458.

Gator Mail Q or M 10 user ..... 675.

### CE Software

In/Out (1-5 user) ..... 127.

In/Out (1-10 user) ..... 186.

QuickMail 2.2

1-5 users ..... 207.

1-10 users ..... 307.

1-50 users ..... 1,567.

### DataViz

MacLink Translators ..... 97.

### DataClub

3 users ..... 198.

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### Dayna Communications

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DaynaPort E/SE, II & O30 ..... 355.

DaynaNET/4L ..... 565.

Speed guard collision filter ..... 52.

DaynaTalk for Macintosh

Single ..... 95.

5 Pack ..... 380.

10 Pack ..... 715.

### DayStar Digital

Local Talk Board

LT 200 MC ..... 295.

LT 200 PC ..... 185.

### Dove

Ethernet

FastNet SE, SE/30 or

FastNet III ..... 340.

### Farallon

LocalTalk -

PhoneNET DIN-8 ..... 30.

PhoneNET DIN-8 (10 Pk) ..... 195.

PhoneNET DB-9 ..... 30.

Star Connector (single) ..... 17.

Star Connector (10 Pk) ..... 125.

Star Controller 300 ..... 819.

Repeater ..... 309.

PhoneNet/AppleTalk Adapt. .... 8.

Ethernet - PhoneNET cards

include Timbuktu & RJ45 cable

PhoneNET EN Mac II ..... 350.

Mac II Card (10 Pk) ..... 375.

PhoneNET EN SE/30 ..... 350.

SE/30 Card (10 Pk) ..... 375.

Star Connector EN ..... 120.

Star Controller EN ..... 1,588.

Star Wiring Kits-

Star Controller LT/EN ..... 62.

Passive Star ..... 62.



## Paracomp FilmMaker 2.0

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## DRAFTING & CAD

### Abracadabra

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Architecture, Interiors &  
Landscape ..... ea. 60.

### Claris

Claris Card 2.0 ..... 624.

MacDraw II ..... 288.

### Generic Software

CADD for the Macintosh ..... 374.

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### Ashlar

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### Graphsoft

Blueprint 2.0 ..... Call.

MiniCad+ 3.0 ..... 585.

### Innovative Data Design

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Mac Draft 2.0 ..... 192.

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## MULTI-MEDIA

### Aapps Corporation

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### Digital Vision

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### Farallon

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### MacroMind

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MacroMind Director 2.0 ..... 437.

MacroMind Director 3D ..... \$\$\$.

### Orange Micro

Personal Vision ..... 1,383.

OMI Converter ..... 615.

### RasterOps

Video Expander ..... 525.

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364 Board w/Director ..... 1295.

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Professor Mac .....\$29

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### Avery Labels

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### CoStar

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Carrying Cases - Blue or Black

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MacLuggage Classic/SE ..... 64.

MacLuggage II/IIx ..... 98.

MacLuggage IIcx-ci-si ..... 84.

Ultimate Classic Case ..... 84.

The Ultimate SE ..... 78.

Ultimate Neon Carrying Case

Green - Pink - Yellow ..... 88.

### Kensington Microware

Dust Cover SE XKB ..... 9.

### Kensington Microware

Dust Cover SE ..... 9.

ImageWriter II Cover ..... 8.

Anti-glare Filter ..... 32.

SE Rad./Anti-Glare Filter ..... 51.

Anti-glare Filter 13" Apple ..... 63.

System Saver ..... 63.

System Saver SE ..... 52.

Universal Printer Stand ..... 15.

Mac II Stand w/o cable ..... 19.

Mac IIcx Monitor Stand ..... 54.

Mac II Monitor Stand ..... 64.

Mac II Mon. Cable Ext. Kit ..... 32.

Masterpiece Mac II ..... 105.

Extended ADB Cable ..... 24.

Universal Copy Stand ..... 22.

Printer Muffler 80 ..... 43.

Power Tree 10 ..... 19.

Power Tree 20 ..... 27.

Power Tree 50 ..... 54.

Apple Security Kit ..... 34.

LaserWriter II Security Kit ..... 32.

### Kensington Microware

A-B Box (DIN-8) ..... 63.

SuperBase ..... 31.

PowerBacker 360 ..... 269.

PowerBacker 450 ..... 337.

PowerBacker 520 ..... 397.

PowerBacker 800 ..... 746.

PowerBacker 1200 ..... 946.

Pass Proof ..... 70.

SideClip ..... 6.

### Mac Packs - Linebacker

Navy, Wine or Gray

ImageWriter Bag ..... 45.

Mac Plus/SE Bag ..... 55.

Mac SE Bag Xt ..... 69.

### Smack-a-Mac

Smack-a-Mac Stuffed Mac ..... 8.

Covers

SE/Plus w/ext. keyboard ..... 17.

SE/Plus w/std. keyboard ..... 17.

Apple 13" monitor & ext.

keyboard ..... 18.



## Shiva Corp. NetModem V.32

The NetModem V.32 is a 9600 bps modem that is designed to be shared over AppleTalk. The NetModem also includes Dial-In Network access software which allows a remote Mac or PC to dial into the network and use electronic mail, printers and other network resources.

NetModem  
V.32 .....\$1165



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Virtual - Mac II w/PMMU .....	187.
Virtual - SE/30, IIX, IIX .....	114.

### DayStar Digital

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II, IIX .....	1,115.
PowerCard 030 33MHz	
II, IIX .....	1,495.
PowerCard 030 40MHz	
II, IIX .....	1,650.
PowerCard 030 50MHz	
II, IIX .....	2,245.
SCSI Accelerator - w/o SIMMS	
SCSI PowerCard .....	1,025.

### DayStar Digital

RAM Expansion - w/o SIMMS	
RAM PowerCard .....	625.

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MacSnap Upgrades	
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524XS (524XE w/SCSI) .....	260.
596XE (512KE to 4MB) .....	390.
596XS (596XE w/SCSI) .....	455.

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Marathon Racer .....	170.

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Mac qty 4 .....	Call.
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free Nanodisk software.	

### Orange Micro

Mac 286 v.3.0 .....	1,078.
Mac 86 v.3.0 .....	444.
Orange Micro 386 .....	1,695.

### Total Systems

Gemini 68030 Accelerators	
16MHz w/o FPU .....	595.
16MHz w/FPU .....	895.
20MHz w/o FPU .....	850.
20MHz w/FPU .....	995.
25MHz w/o FPU .....	1,025.
25MHz w/FPU .....	1,275.
Gemini II 68030 Accelerators	
33MHz FPU .....	1,575.
40MHz w/FPU .....	1,850.
50MHz w/FPU .....	2,175.
Voyager 68030 for Mac II & IIX	
33MHz w/FPU .....	1,575.
50MHz w/FPU .....	3,395.
GemKit (Required to install the	
Gemini, Gemini II or Mercury	
boards in any Mac below an SE	
model. Includes internal fan,	
SCSI port.	
Specify US or Int'l version) 125.	



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## MODEMS & FAX

### Abaton

InterFax 12/48 .....	264.
InterFax 24/96 .....	417.
InterFax 24/96-220V .....	417.

### Applied Engineering

DataLink Express -	
MNP 5 .....	195.
MNP 5 w/Send FAX .....	225.
DataLink Mac II -	
MNP 5 .....	250.
MNP 5 w/Send FAX .....	275.
DataLink Mac Portable -	
MNP 5 w/Send FAX .....	275.

### CompuServe

Membership Kit .....	22.
CompuServe	
Navigator 3.0 .....	48.

### Dove

DoveFax 24/96 .....	298.
DoveFax Plus .....	395.

### Everex

EMAC MD2400 MNP 5 .....	175.
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### FreeSoft

Second Sight .....	85.
White Knight 11 .....	84.

### Global Village

Teleport ADB .....	128.
Teleport SendFAX .....	185.

### Hayes

Smartcom II 3.1 .....	84.
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### Microcom

MacModem v.32 MNP 9 .....	675.
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### Orchid Technology

Orchid Fax Modem .....	435.
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### Prometheus

Modems come with cables &	
MacKnowledge .....	84.
MaxFax 24/96 .....	308.

### Prometheus

MaxFax 9600 .....	698.
Travel Modem - Port. ....	204.

### ProModem

2400 Mini .....	138.
2400 SE Int.(MNP5) .....	245.
2400 II Int.(MNP5) .....	259.
9600 V.32 .....	750.

### Shiva Corporation

NetModem V2400 .....	410.
NetModem 9600V.32 .....	1165.

### Software Ventures

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### Solutions

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### Supra Corp.

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### Synergy Software

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### U.S. Robotics - Courier

HST Std. V.42 9600 .....	675.
HST Dual Std. V.42 9600 .....	995.

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### Digital

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### True BASIC, Inc.

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### Zedcor

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How to Write a Bus. Plan .....	85.
<b>Aldus</b>	
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<b>Blyth Software</b>	
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<b>CE Software</b>	
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Record Holder Plus .....	82.

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File Force ..... \$244



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### Dynaware DynaPerspective

DynaPerspective is a three-dimensional modeling and design presentation program that can stand alone or enhance other CAD systems with its innovations and unique features. Highly flexible geometric primitives allow rapid creation of designs, assigning such attributes as color, transparency, line type, border display, etc., which can be edited at any stage of the construction. Automatic or step-by-step walk through presentations are easily created.

DynaPerspective ..... \$635

## INPUT AND OUTPUT DEVICES

<b>Abaton Technology Corp.</b>	
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12" x 12" .....	384.
12" x 17" .....	624.
<b>MicroSpeed</b>	
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MacTRAC 512/+ .....	60.
<b>Microtek - Scanners</b>	
300GS .....	1,375.
300ZS .....	1,831.
<b>Microtouch</b>	
UnMouse .....	180.
<b>MSC Technologies</b>	
Little Mouse A+ 512k/Plus .....	69.
Little Mouse A+ ADB .....	74.

<b>Olduvai Software</b>	
Read-It! Personal 2.1 .....	Call
Read-It! OCR 2.1 .....	Call
<b>The Complete PC</b>	
Half Page Scanner/400 .....	294.
Full Page Scanner .....	755.
<b>Thunderware</b>	
Lightning Scan 400 .....	384.
ThunderScan Plus .....	198.



### Microsoft Excel 2.2

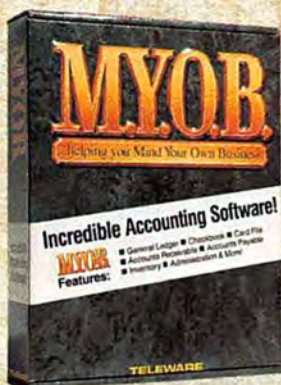
Microsoft Excel 2.2 delivers a host of improvements and new features. It recalculates up to 40% faster and the new Search and Replace function makes global changes. Charting is improved - just double-click anywhere on a chart to see the dialog box for all the chart formatting commands.

Excel 2.2 ..... \$238





# Software to manage your money



TELEWARE, Inc.

M.Y.O.B. 2.0

Incredible accounting software for small and medium size businesses. "Best business deal on the Mac" - MacUser - Eddy Awards. Fully integrated G/L, checkbook, A/R, A/P, Inventory, and Card File. M.Y.O.B. combines a powerful fully integrated accounting program with management tools you can't find anywhere else. With just a few clicks, you can control every facet of your business...print your financial reports, reconcile your checkbook, even call your customers, all with M.Y.O.B.

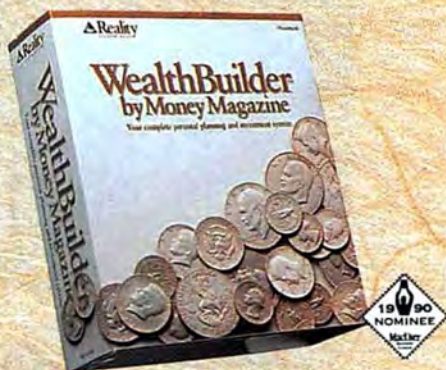
M.Y.O.B. 2.0 .....\$144



Meca Software, Inc.  
Managing Your Money

Andrew Tobias' Managing Your Money is personal financial software that includes powerful financial "chapters" that provide everything from basic budget and checkbook management to life insurance and tax planning, even complex portfolio management. These integrated chapters allow transactions made in one part of the program to be automatically recorded in the other chapters.

Managing Your Money .....\$230



Reality Technologies Wealth Builder

Calculate your net worth by using templates to easily create a personal profile, balance sheet and budget summary. If you use Quicken, Andrew Tobias' Managing Your Money or Mac Money you can import data directly. Also establish realistic financial goals, objectives and then take action!

Wealth Builder .....\$144



Chipsoft  
TurboTax

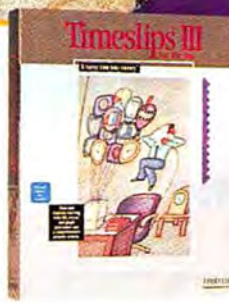
TurboTax Personal/1040 takes the hard work out of preparing your federal taxes. When finished, it prints out your completed tax form and all supplemental schedules. TurboTax warns you of questionable deductions and tells you what the IRS regards as normal.

TurboTax ...\$54

Survivor Software  
MacMoney

MacMoney - an award winning personal and small business basic accounting program. More than just check writing, it tracks multiple bank accounts, credit cards, and cash accounts, as well as assets and liabilities. Prints reports, graphs and checks and it's easy to use. Complete double entry accounting without having to understand accounting terms. Includes simple loan and retirement planning.

MacMoney .....\$58



TimeSlips III 2.0

TimeSlips III for the Mac is the ultimate time tracking and billing software system. With it you'll find that your workday is being spent more productively, and that your billings are

much more complete. The features and functions are so simple, they practically run themselves.

Time Slips III .....\$167

## ACCOUNTING & FINANCE

### Absolute Solutions

Computerized Classic Accounting ..... 223.

### Check Mark Software

Cash Ledger ..... 114.  
MultiLedger 1.3A ..... 234.  
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### Computer Associates

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### In-House Software

In-House Accountant ..... 135.

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### Softview

Business, DOD & GSA

Expense Reports ..... ea. 49.

Personal Tax Analyst ..... 49.

### Softview

Payroll Tax Assistant ..... 90.

Home Loan Assistant ..... 63.

Mac InTax 1040 ..... Call.

State Supplements ..... Call.

Tax View 1040 Pro ..... Call.

Tax View 1020 Corp ..... Call.

### Software Toolworks

Dollars & Sense 5.0 ..... 77.

### Survivor Software

Invoice It ..... 48.

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### Teleware

M.Y.O.B. .... 142.

### Softsync Accountant Inc.

Accountant, Inc. is a business accounting package that integrates General Ledger, Accounts, Payable, Accounts Receivable, Inventory, Payroll, Job Costing, Project Management and complete financial analysis. Businesses can tract an unlimited number of customers, vendors, inventory items and General Ledger accounts. The program creates invoices, purchase orders, statements, credit memos and job quotes.

Accountant Inc., .....\$345



SoftStream HyperTax Tutor

HyperTax Tutor navigates quickly to answer tax questions while teaching the fundamentals of tax-saving strategies. Kamensky's clean and concise style shows you how to plan your finances through the year with over 100 examples. HyperTax Tutor will help you learn how to make the tax laws work to your advantage.

HyperTax Tutor .....\$61

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# Excite your imagination with monitors for every Macintosh

## Cutting Edge 15" Full Page Monitor

You can now eliminate all the scrolling, scrunching and squinting of small screen Macintosh computing. Word processing, financial analysis and graphics have never looked as good as they do on this full screen viewing area. The monitor can display an entire 8-1/2 x 11 inches of screen with a flicker-free refresh rate of 75 Hertz and a high resolution of 640 by 870 pixels

15" Monitor .....\$579



## E-Machine T-16 Color Display

Spread out with almost twice the display area of the standard 13" color monitor. View your work exactly as it will be printed at actual size - 72 dpi. Save almost one half the cost of a 19" color monitor. Get the sharpest, clearest color display at any price. The T16 has excellent colors, linearity, and sharpness, and it sells for a lot less than its larger cousins. The T16 is an excellent choice for CAD/CAM or color graphics. Retail \$2995.

T16 Color Monitor .....\$2275

## Sigma L-View Multi-Mode Monitor

An ergonomic monitor design offers user-oriented details like a tilt/swivel base and paper white phosphor. L-View's Low-Emission design meets guidelines for electromagnetic field emissions established by the Swedish National Board for Measurement and Testing. L-View includes video card, 19" monitor, control panel software, and user's guide.

Multi-Mode Monitor .....\$1475



## MegaGraphics Rival B & W Monitor

The critically acclaimed MegaGraphics Rival is now available for all Macintosh models. It gives you the most crisp, most clear, and brightest image in the business, with true "What You See is What You Get." Because the 19" screen displays two facing pages, it is ideal for use in desktop publishing, layout and word processing. The wide expanse of workspace is an enormous benefit when using CAD and spread sheet applications.

Rival 2001 .....\$1199

## VIDEO BOARDS & MONITORS

### Micron - 8 Bit Color Cards

Resolution 640 x 480 ..... 345.  
Mac II or SE/30 ..... 345.  
Resolution 1024 x 768 ..... 585.  
Mac II or SE/30 ..... 585.

### RasterOps

ClearVue/GS Gray Scale ..... 1692.  
System Mac II & SE/30 ..... 1692.

### ColorBoards

208 (II, IIx, IIcx, IIci) ..... 290.  
264 (SE/30 - 13") ..... 525.  
264 (Mac II - 13") ..... 435.  
364 (Mac II - 13") ..... 955.

### RasterOps

Multi Media ..... 1525.  
364 w/AudioMedia ..... 1525.  
364 w/Director ..... 1295.

### Sigma Designs

L-View Multi Mode ..... 1475.  
SE/30 or Mac II ..... 1475.

### Page View

SE, SE/30 or MacII ..... 850.  
Silver View for Mac II ..... 1850.  
Color Max 24 ..... 4350.

### Sony - Color Multiscan

14" 1304 HG Color ..... 825.



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## CATALOG



## New Full Page Plus and Classic Monitors

Princeton full page display with Lapis video card for the Macintosh Plus and Classic. Apple phosphor and 75Hz Vertical Refresh. Includes \$25 Rebate coupon for dealer installation.

Classic .....\$649  
Plus .....\$679

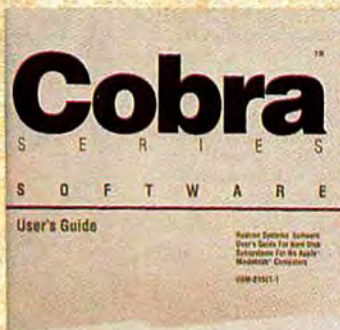


\* Special shipping charges apply for monitors. Call for details. All returned monitors are subject to a 15% restocking fee.



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**The Mac  
Zone**  
Established 1986



## Rodime 210Mb Cobra External Hard Drive

Cobra Drives set the standard. Cobra high performance internal and external hard drives are the finest drives available for Mac. With capacities of 45MB, 70MB, 100MB, and 210 MB, Cobra is the answer to all your storage needs. External Cobra drives come in a new, sleek low profile cabinet that fits neatly beneath your Mac Plus, Mac SE or Mac SE/30. Internal Cobra drives come with three mounting brackets. One for installation in the MacII, Mac IIx, Mac SE or MacSE/30, one for mounting in the Mac IIcx and one for a MacSE which allows you to keep both floppy ports active.

210Mb Cobra External ..... \$1475



## PLI Infinity 40 Turbo Removable Hard Drive

The Infinity 40 Turbo uses PLI's turbocharged driver software to attain a 20ms access time, and with the TurboCache disk accelerator software and TurboBoost, you can achieve near zero effective average access times. This removable 45MB drive gives you infinite storage potential with removable cartridges. Each one holds 44MB and costs only slightly more per megabyte than floppy disks.

40 Turbo Removable ..... \$750



## Cutting Edge 20 Mb Drive

Cutting Edge hard drives represent the best value in Macintosh storage. Major enhancements include quieter fan, two power outlets and added surge protection.

20 Mb Drive ..... \$299



## Applied Engineering 1.44 mb Drive

Applied Engineering's SuperDrive-compatible 1.44 Mb high density drive looks, feels runs, reads, writes, stacks and even smells like Apple's But it costs hundreds less. Access files almost instantly and copy disks without continually swapping disks. This drive incorporates the same high quality Sony Mechanism Apple uses and features auto-eject MS-DOS compatibility and exclusive two-way read/write indicator light. Also available in 800K.

1.44 MB Drive ..... \$225  
800k Drive ..... \$195

## EMAC Impact Drive

The EMAC Impact hard drives pack all the power and convenience of a full-sized drive into a compact chassis. Now all your files and applications can be stores in one easily accessed location. Impact drives come in three capacities and are built with precision-engineered drive mechanisms for whisper-quiet, high-speed operation.

105 mb Drive ..... \$805



## HARD DRIVES

### Quantum External

40MB	428.
80MB	598.
105MB	679.
120MB	768.
170MB	928.

### Quantum Internal

40MB	349.
80MB	569.
105MB	599.
120MB	768.
170MB	869.

### Emac - Impact

20MB External	385.
40MB External	520.
80MB External	750.
170MB External	1305.

### Cutting Edge

#### Seagate Mechanisms

30MB External	379.
45MB External	439.
60MB External	469.
80MB External	529.

#### SyQuest Mechanisms

45MB Removable	679.
----------------	------

#### La Cie - Tsunami

Quantum Mechanisms	
40MB External	629.
80MB External	829.
105MB External	929.
120MB External	1029.
170MB External	1229.
210MB External	1329.

### Microtech

#### Seagate Mechanisms

20MB External	309.
40MB External	420.
80MB External	560.
100MB External	675.

### PLI

#### Turbos:

250MB External	1725.
300MB External	1975.
600MB External	2850.
SyQuest Removable	
Infinity Twin	1475.
Carrying Case	60.

### Rodime

SyQuest Mechanism	
45MB Removable	659.

### Rodime

#### Rodime Plus

20MB External	328.
45MB External	449.

#### Rodime Cobra Mechanisms

45MB External	670.
45MB Internal	535.
70MB External	870.
70MB Internal	735.
100MB External	975.
100MB Internal	870.
210MB Internal	1345.
330MB External	2125.
330MB Internal	1995.
650MB External	3125.

### SyQuest

44MB Cartridge	74.
----------------	-----

## FLOPPY DRIVES

### Dayna Communications

DaynaFile 360K 5.25"	475.
DaynaFile Dual Drives:	
360K/1.2MB 5.25"	725.
360K/1.44MB 5.25/3.5"	748.
DOS Mounter	53.

## CD ROM

### CD Technology

Toshiba Mechanisms	
Porta Drive CD ROM	648.

### NEC

CDR-35 Port. CD ROM	458.
CD-ROM-35 Battery Pack	58.

### PLI

CD ROM Drive	875.
600MB Optical Drive	3794.
600MB Optical Cartridge	235.

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## Quark XPress 3.0

XPress 3.0 boasts a more intuitive user interface, many new features, plus redesigned and reorganized documentation. New measurement and page palettes provide the user with interactive on-screen access. A library stores frequently used items, and a pasteboard provides a work area next to each page. Color trapping ensures precise color printing.

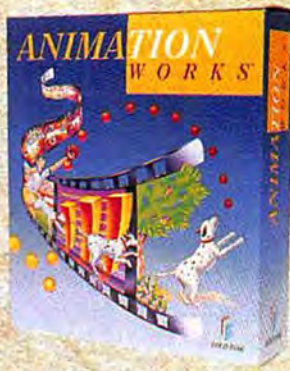
XPress 3.0 .....\$508

## Gold Disk

### Animation Works

Animation Works is a 1 to 8 bit, easy-to-use, path-based animation program. Objects are created in the CEL editor and then animated over static or scrolling backgrounds in the Movie Editor. Also available is the ability to add sounds, color cycling, multiple palettes, and looping control.

Animation Works .....\$64



## EDUCATION

### Addison Wesley

Inside Macintosh, Vol. 1-5ea18.  
Inside Macintosh, X-Ref ..... 8.  
Mac Programming Primer ..... 21.  
Mac Programming Secrets 19.  
Programmers Online  
Companion 2.1 ..... 35.

### Bright Star

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### Braderbund

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Math Blaster - Mystery ..... 29.  
Earthquest, Inc.  
Earthquest ..... 48.

### First Byte

The Dinosaur Discovery Kit 25.  
Kid Talk or Math Talk ..... ea33.  
Math Talk Fractions ..... 26.  
Spell-A-Saurus ..... 30.  
The Puzzle Story Book ..... 26.

### Goldstein & Blair

Macintosh Bible 3rd Ed. .... 23.  
Bible & What Do I Do Now?  
Book Combo ..... 31.

### Goldstein & Blair

Bible, What Do I Do Now?  
& Software Combo ..... 39.  
**Great Wave**  
KidsMath or Kids Time ..... 25.  
NumberMaze ..... 25.

### Hyperglot

**Russian**  
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Noun Tutor(Sound) ..... 58.  
**Spanish**  
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Pronunciation Tutor ..... 34.

### Hyperglot

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Pronunciation Tutor ..... 34.  
Verb or Tense Tutor ..... 41.  
**German**  
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Pronunciation Tutor ..... 34.  
Verb Tutor ..... 41.  
**Italian**  
Word Torture 3.0 ..... 28.  
**Japanese**  
KanjiMaster ..... 97.  
EasyKana ..... 125.  
**Individual Software**  
Training for PageMaker 4.0 ..... 29.  
Typing Encore 3.5 ..... 17.

### Learning Company

Math Rabbit ..... 30.  
Reader Rabbit 2.2 ..... 30.

### Personal Training Systems

MacZone carries the complete line of PTS programs ..... 51 ea.

### Nordic Software

MacKids PreSchool Pack ... 34.  
Turbo Math Facts ..... 22.  
Word Quest ..... 29.  
**Simon & Schuster**  
Typing Tutor IV ..... 28.  
**Software Toolworks**  
M. Beacon Teaches Typing 31.  
Accu-Weather ..... 53.  
World Atlas ..... 40.

### True BASIC, Inc.

Algebra, Arithmetic, Calc ea39.  
Discrete Mathematics ..... 39.  
Pre-Calculus/Trig. .... 39.  
Probability Theory ..... 39.  
True STAT ..... 39.

### Combo Packs w/Workbook

Algebra Combo Pack ..... 44.  
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Pre-Calculus Combo Pack ... 44.

### Visionary Software

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### Addison Wesley

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### Braderbund

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Ancient Art of War at Sea ... 25.  
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### Infocom

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### Lucasfilm

Pipe Dream ..... 16.  
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### Microsoft

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### Mindscape

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### New World Computing, Inc.

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### Strategic Simulations, Inc.

AD&D: Pool of Radiance ... 32.

### Postcraft International

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Falcon 2.2 ..... 29.  
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Vette! ..... 32.

### Strategic Studies Group

Patton vs Rommel ..... 14.  
Halls of Montezuma ..... 28.  
Reach for the Stars ..... Call.  
Gold of the Americas ..... Call.

### Three Sixty

Sands of Fire ..... 32.  
Armor Alley ..... 33.  
Harpoon ..... 40.

### Visionary Software

Synchronicity ..... 38.

### XOR Corporation

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MacGolf Classic ..... 51.  
NFL Challenge ..... 53.

We offer a complete selection of entertainment products.  
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TouchBASE .....\$85



## Ventura Publisher

It's simple to get professional results with Ventura Publisher. It's great for brochures, newsletters, ads or routine office correspondence. Ventura automates many steps other programs force you to repeat over and over. Unlike conventional page make-up packages, Ventura Publisher manages the underlying structure of your documents. As you make changes in one part, other parts change automatically. Ventura Publisher also allows full cross-platform compatibility.

Publisher .....\$584

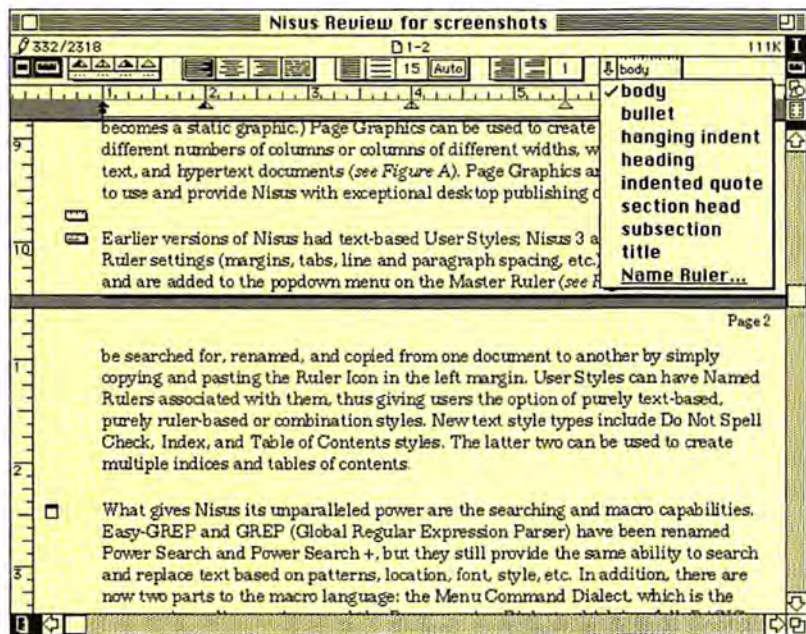


## Petroglyph Editorial Advisor

Editorial Advisor is a comprehensive in-line reference for writers and editors that covers grammar, punctuation, style, usage, composition, citation and other editorial conventions. Use with any program or as a stand-alone. No typing or memorization of keywords is required. Editorial Advisor provides the answers but leaves you in charge - to make informed editorial decision.

Editorial Advisor .....\$92





Nisus lets you name rulers to create ruler-based styles in addition to the text-based user styles. Named rulers are indicated by a line in the ruler icon in the left margin and are listed in the pop-down menu on the master ruler.

improved to work more smoothly and logically. Macros for outlining and a clever appointment calendar have also been added.

### Graphically Better

Nisus' graphics have been greatly improved. There are now two drawing layers, one above and one below the text layer. Graphics can be fixed on the page or anchored to a paragraph. New graphics commands include Rotate by 90°, Scale, and Duplication. Clicking on rotated text with the text tool rotates it back to its normal position for editing.

A major graphic enhancement is Page Graphics. This feature allows an entire document (child) to be placed as a graphic into your currently active document (parent). As a graphic, the placed page can be rotated, scaled, or cropped. The child file can be opened for editing by a double-click. (If the child file is not currently available, the placed page becomes a static graphic.) Page Graphics can be used to create documents with different numbers of columns or columns of different widths. It can also create documents with formatted, rotated text as well as pseudo-hypertext documents. Page Graphics is incredibly simple to use and provides Nisus with exceptional desktop-publishing capability.

Earlier versions of Nisus had text-based user styles; the new version adds named rulers. Ruler settings (margins, tabs, line and paragraph spacing, and the like) can be named and added to the pop-down menu on the master ruler. Rulers can be searched for, renamed, and copied from one document to another — you simply copy and paste the ruler icon in the left margin. User styles can have named rulers associated with them, which gives users the option of purely text-based, purely ruler-based, or a combination of styles. New text style types include Do Not Spell Check, Index, and Table of Contents. The latter two can be used to create multiple indexes and tables of contents.

### Searching and Macros

What gives Nisus its unparalleled power is its searching and macro capabilities. GREP (global regular expression parser) and Easy-GREP have been renamed Power Search + and Power Search, but they still provide the same ability to search for and replace text based on patterns, location, font, style, and other parameters. In addition, the macro language now has two parts: the Menu Command Dialect, which hasn't changed from earlier versions, and the Programming Dialect, which is a full BASIC-like programming language. The Programming Dialect, described in a

separate 45-page booklet, includes If and GoTo statements; math, Boolean, date/time, and string functions; and variables and constants. Several of the macros in Nisus 3.0, such as the outlining and appointment-calendar macros, use the Programming Dialect. Other macros have been written to generate random math-problem sets with answer keys, to automatically format C programs, and to create a boomerang-like file list in the Catalog window.

The Menu Command and Programming Dialects have a similar relationship to each other as do Power Search and Power Search +. With Menu Command and Power Search, even fairly casual users can do complex searching and create useful macros. With Programming Dialects and Power Search +, users who are more experienced or intrepid can wield unprecedented amounts of power.

Nisus can read Microsoft Word 3.0x and 4.0 files and write Word 3.0x files. An Aldus filter is included so Nisus files can be placed in PageMaker 4.0. Files are kept in memory, which results in fast scrolling and searching, but file size is limited by the amount of RAM.

The program's documentation has been completely rewritten and is generally clear and complete, although sometimes a lot of information is packed into a brief discussion.

### The Bottom Line

Although Nisus has an intuitive design and is easy to learn and use, it is aimed at high-end users such as technical writers, lawyers, and others who need extensive control over long documents. Novices may be intimidated by the number of menu options, and there is no Short Menus option as there is in Word. For those who process a lot of words, however, Nisus is an excellent choice.

— Linda Iroff

### Get Info

#### Nisus

\$\$\$½

**Published by:** Paragon Concepts,  
990 Highland Drive, #312, Solana  
Beach, CA 92075; (800) 922-  
2993 or (619) 481-1477.

**Version:** 3.01.

**List Price:** \$395.



# New! **CLICK CHANGE**™

## Personalize the Look & Feel of your Macintosh

Colorful, 3-dimensional windows, buttons, scrollbars, and cursors are now just a click away. With ClickChange in the control panel, the User is master of the "User Interface".



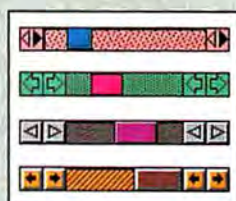
**ClickChange Cursors.** Replace the 5 factory-issue cursors with fully animated custom cursors. Put some fun into waiting (well, OK—at least ease the tedium). Design your own cursors, and amaze your friends!



**ClickChange Buttons.** Tired of those flat 50's style Mac buttons? Slip on one of our sleek, modern, 3D designs. It's what the next generation of computers is wearing these days.



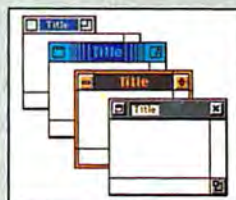
**ClickChange Sounds.** Set sounds to play when your Mac starts up, shuts down, finishes loading all your INITs, beeps, inserts/ejects disks, and other major events. Import your own sounds and annoy your friends!



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## NEW ON THE MENU REVIEWS

### OCR

## Typist

**Typist promises one-stop OCR convenience, but it doesn't deliver consistently.**

On paper, Typist, Caere's latest attempt to extend its hegemony over OCR, sounds great: A hand-held scanner combined with recognition software that lets you scan text directly into the application you're using at the time. Unfortunately for Caere — and users — Typist's performance doesn't live up to its promise.

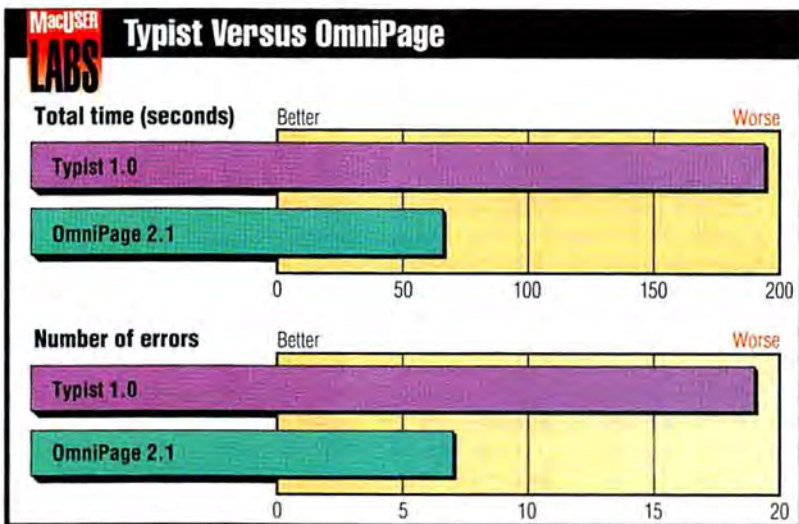
### A Sleek Idea

The idea is imaginative yet simple: Using the sleek black hand-held scanner (it looks as much like a Stealth bomber as it does a scanner), you can have the OCR software simulate someone typing at the keyboard. Typist doesn't care what kind of application you're using; if the program accepts keyboard input, it can theoretically accept Typist input. You don't have to switch to a separate application to scan and then bring the text into the target program. Typist heralds the advent of one-stop OCR.

Typist's software installs as a startup application (an INIT) and a DA. Installation is easy, except that you must install the DA under the Finder — not MultiFinder — and it must be installed into the System file — you can't use Suitcase.

Hardware installation can be a bit more difficult. Typist has a SCSI interface that perversely insists on being last in the chain, which means you might have to experiment with different configurations if you have several SCSI peripherals. To make it even harder, Caere doesn't provide a cable, which means you will probably have to go back to your computer store to buy a cable and perhaps a terminator. The only convenient part of the hardware installation is that it's easy to change the SCSI number on the interface box. The scanner is comfortable to hold and use, but it lacks an on/off switch, so it also doubles as a high-tech desktop night-light, because its LEDs are forever glowing.

The system requirements for Typist are the same as for the stand-alone version of OmniPage: 4 megabytes of RAM, a hard-disk drive, and an SE or later. The big difference between Typist and OmniPage is in price. At \$695 (or around \$795 if you have to buy a cable and a terminator), Typist compares more than a little favorably with OmniPage installed with OmniDraft (\$895) plus a scanner (around \$1,000).



Scanning and recognizing a single-page document of approximately 1,500 words took Typist nearly three times as long as OmniPage 2.1, and it made almost three times as many mistakes. Part of the time difference was a result of having to make many Typist scans in order to get an optimal image. Typist, however, did do an excellent job of merging two scans into a single page. OmniPage, with a flatbed scanner, worked the first time.





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## NEW ON THE MENU REVIEWS



Caere's Typist is a hand-held scanner OCR package that promises seamless OCR integration into any application. Unfortunately, the system promises much more than it delivers.

At this price, it seems almost too good to be true. What's the catch? For one thing, don't expect Typist to double as a graphics scanner. It can scan graphics, but its features in that area are extremely limited and rudimentary.

When it comes to OCR, Typist boasts some nice features, but don't expect it to do everything OmniPage does. It does accept dot-matrix scanning, which is a \$100 extra for OmniPage, but it lacks one of OmniPage's best features: automatic page decomposition. Page decomposition lets OmniPage scan a page and then automatically filter out nontext areas. This means you can easily scan a page, even if it contains graphics, lines, or handwriting. Typist is not nearly this smart. If a page contains graphics, you have to scan around them manually or mask them before you begin. And if you should scan an embedded graphic, Typist's software will sit and churn for a long time trying to interpret the image as an ASCII character. Unfortunately, once it's decided that it isn't looking at text, it can't always recover and continue its recognition run.

### Fussbudget

Another major problem with Typist is that it is, shall we say, fussy about what it runs with. The terse manual is uncharacteristically detailed in its troubleshooting sections and warns that you might experience both INIT and DA conflicts with Typist. The 1.0 release notes also mention conflicts with WingZ and Microsoft Works.

But the worst incompatibility isn't mentioned in the documentation. I discovered a SCSI conflict that prevented repeated scans into any application that wasn't located on my internal hard disk.

So if you have any applications on an external hard disk, you can't scan into any of them. The many messages I left on Caere's technical-support line finally resulted in a return call that confirmed this problem — at least for my system. The technical-support person admitted that the product was too new for Caere to know for sure if this would be true for all systems.

Typist's fussiness doesn't stop at setup. Scanning with Typist is far more problematic than with a flat-bed scanner. Glossy paper often presents problems, as does light paper if any ink shows through from the back. Typist is also hypersensitive to irregular motions while you're scanning. When the device moves off the edge of a book, for example, the result is often a badly garbled line.

### The Bottom Line

The ultimate proof of OCR is accuracy and speed. When scanning a one-page document, Typist 1.0 took nearly three times as long as OmniPage 2.1 to get an acceptable recognition run and it made nearly three times as many errors (see chart). Although Typist is admittedly faster than typing, its finicky scanning and only average recognition performance make it hard to recommend.

Typist is a clever and intriguing idea that unfortunately falls far short of its potential. Although it's still several times faster than even the fastest human typist (about 500 words per minute is hardly slow), Typist's many inconveniences make it difficult to recommend. Once its many software incompatibilities have been ironed out and if accuracy and graphics scanning are improved, Typist could well deliver on its promise of one-stop scanning. Until then, only those with simple hardware setups, graphics-free scanning needs, tight budgets, and a lot of patience should bother with it.

— Dave Vallulis

## Get Info

### Typist



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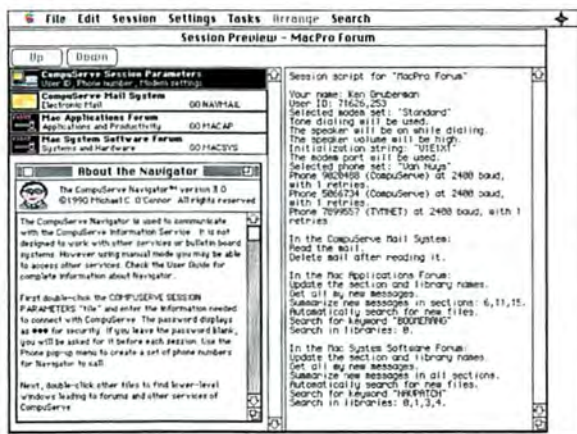
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## NEW ON THE MENU REVIEWS

### TELECOMMUNICATIONS

## Navigator and CIM

**CompuServe's two interfaces are a decidedly mixed bag of tricks.**



Frequent CompuServe users should investigate Navigator. Once you've decided what you'd like Navigator to do while you're on-line, all that's left is to run the session. Navigator then executes all your commands at blinding speed. If you get into trouble, Help is always available.

The CompuServe Information Service (CIS) is one of the country's oldest and biggest on-line data services. Until recently it also sported one of the oldest, most inelegant interfaces known to man. Mac owners originally had to use general-purpose telecommunications programs, such as Smartcom, Red Ryder, or Microphone, in terminal-emulation mode, to access the service. A few years ago, Michael O'Connor decided to change all that, and Navigator was born.

Navigator added a much-needed Macintosh front end onto CIS. After its second revision, CompuServe bought the program and now sells it, but O'Connor is still (thankfully) involved with Navigator's further improvements.

In 1989 CompuServe developed its HMI (Host-to-Micro Interface) and a program to take advantage of it, CIM (CompuServe Information Manager). The idea was to develop a fully graphic interface that would work with DOS/Windows as well as Macintosh machines. As a result, there are now two CompuServe access programs; the programs are anything but equal, however, and neither is perfect.

### Navigator

Navigator was designed primarily as an off-line program in order to maximize users' on-line time. At CompuServe's usual rate of \$12.50 per hour (at 2,400

bps), the savings can be considerable and, with the advent of CIM, Navigator's cost-effectiveness is more relevant than ever.

Navigator uses tiles as its metaphor for CIS menus and topics. Double-clicking on a root-level tile reveals subtiles underneath. Working your way through the tile levels, you eventually reach a tile where some kind of action can be defined, and an on-line session is created. Although Navigator cannot access every area on CIS, it does reach more than three-quarters of them and also has the provision for converting to "manual mode" to access the rest. The program is fully user-configurable and, when you're on-line, shows what is happening and why.

This feedback is important, because once you're on-line, you have no control over what happens — Navigator runs the show. Navigator can perform complex on-line tasks much faster than a human, thus yielding sizable cost savings for frequent CIS users. For example, I can have Navigator check my mailbox for new mail; send outgoing messages and replies; go over to the Mac Systems Forum; check for new messages, new uploads, and anything else of interest; go to the Mac Applications forum and do the same; and then log off — all in the space of just two minutes! When Navigator signs on, it tells the host mainframe that it is in charge and all the human interfaces are dropped, which makes operation speed





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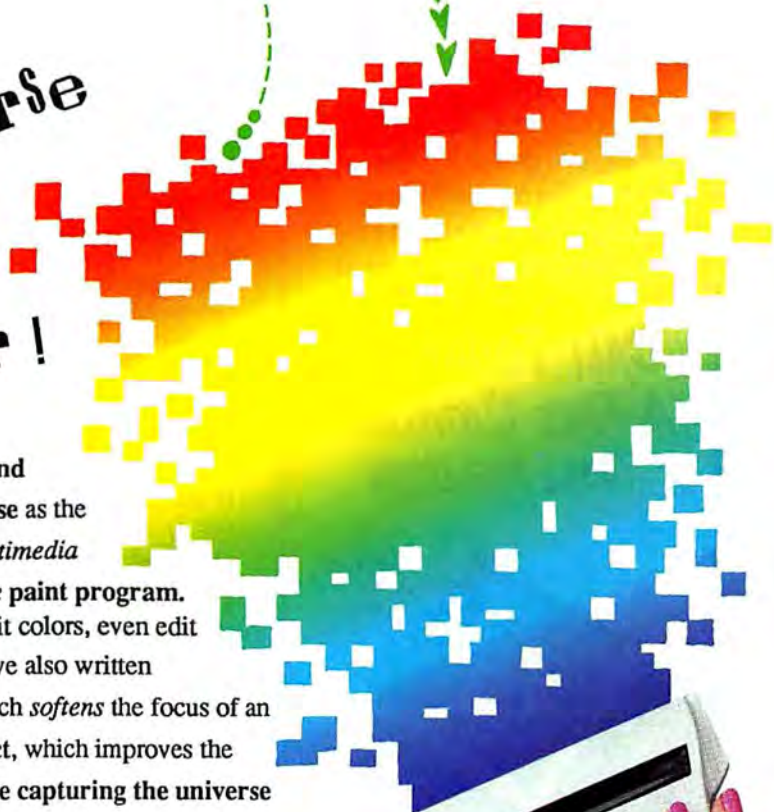
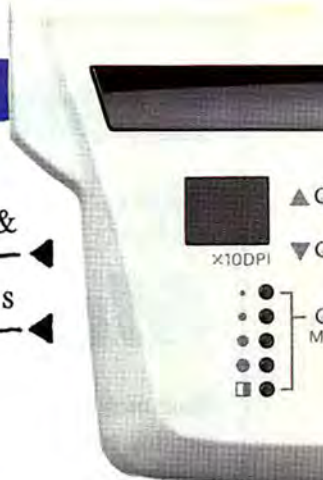
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## NEW ON THE MENU REVIEWS



CIM (CompuServe Information Manager) is CompuServe's attempt at a graphical interface. Unfortunately, it doesn't work very well. Clicking on an icon or listing, instead of bringing up submenus or descriptions, logs on to the service. Note the overuse of icons.

increase by almost 400 percent.

After sign-off, I can browse the session at my leisure, marking files I want to download and replying to mail I've read. Navigator will get what I've asked for at the next sign-on, which can also be automated. The program is extremely flexible and can be configured with any combination of fonts and font sizes, colors, and even sounds. GIF files can be opened, stored, viewed, or sent either on- or off-line. Even "face files" — the little face icons that show forum message readers what the sender looks like — can be stored and edited. The faces can even talk to you while you're reading the message, which is somewhat unnerving until you get used to it. Navigator also offers an automated address book, the ability to archive anything on the screen to any designated file, and much more.

The only drawback of this program is its learning curve. Because Navigator offers so much power and flexibility, it's also more complex and harder to learn than CIM. Also, the metaphors, such as "tiles," "child and sibling," and "session logs," can be somewhat daunting. However, if you take the time to read the manual, the rewards will be ample and any fears you might have about using CIS should vanish.

### CIM

Any fears you might have about incurring an ever-increasing CompuServe bill would be realized if you start using the CompuServe Information Manager, because, unlike Navigator, CIM is an on-line program. CIM offers virtually no automated routines — everything is designed to occur while you're on-line.

However, the balky CIS interface has now been replaced with a more graphic-

oriented, Mac-like interface. I say Mac-like because CIM's interface is what DOS people think a Mac interface is. Unfortunately, CIM sits on top of the Mac interface as badly as Windows 3.0 sits on top of DOS.

To start with, there are too many cutesy icons with dubious meanings. Dimmed icons appear almost identical to those that are not, and I often find myself clicking on icons that don't do anything, because they are inactive. Everything has a window — whether it needs it or not.

Then there is the speed issue. Whereas Navigator is blazingly fast at text and file retrieval, CIM is excruciatingly slow, no doubt because of the heavy interface it has to work through. On certain occasions, a scrolling window of listed files comes to a standstill and scrolling downward yields only one listing at a time. Clicking on a forum name from the master forum list results in a spinning beach-ball icon that remains on-screen for close to a minute before the forum window appears! In a regular telecommunications program, selecting a forum simply by typing **Go MACSYS** takes just a few seconds. If you multiply these slowdowns by the hundreds of times they appear during a typical month's usage, you'll soon figure out how much more money it will cost to use the "easy and economical" CIM.

The worst part of CIM is its Terminal Emulation window. (If there's anything that CompuServe should understand, it's terminal emulation, yet CIM's terminal emulation is botched beyond belief.)

Many areas of CompuServe are actually gateways to other services or are run by third-party vendors and can't be accessed with a graphics-oriented interface. In these cases, CIM throws itself into Terminal Emulation mode. Essentially,



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## NEW ON THE MENU

## REVIEWS

this is just an ASCII-text window — complete with the legendary prompts, commands, and protocols — and is exactly what you see if you sign on to CompuServe with a regular telecommunications program. Unfortunately, this phenomenon occurs in more than half the places you can visit on CompuServe — which means that more often than not, you could be using a better program than CIM.

CIM's Terminal Emulation window can capture only a paltry 500 lines of text, whereas most other programs have an unlimited capture buffer. Five hundred lines can scroll by in just a minute or two, and then the topmost text disappears without warning. To add insult to injury, you must tell the program to turn capture on or off, and turning capture on doesn't suffice to capture the text. You must highlight the text and then save it with another menu command (so the process requires three steps). During a capture session, all incoming data is suspended and you must exit from Capture mode to continue your transmission. And the worst part? All the configuring needed for the Terminal Emulation window to work properly must be done — you guessed it — on-line.

CIM uses Navigator's address book, so it's not necessary to create a new one, but even here there's a problem. CIM wants addresses entered by first name and then last name; it sorts automatically by last name with no need for commas. But Navigator wants entries as last name, comma, first name, so one or the other is going to be jumbled.

CIM lets you "cc:" people whereas Navigator doesn't, but you have to click on the names one at a time — no multiple selections. If CompuServe changes its forum structures — something it's been doing at regular intervals — you have to update Navigator by running an updater application. CIM is updated automatically — while you're on-line, of course.

Both programs come with the same kind of gray, arid, and lifeless manuals that CompuServe is famous for. CIS recommends a Hayes-compatible modem for CIM, and it isn't kidding. CIM lacks any CCLs that let you automatically initialize a shared modem.

CIS is also constantly upgrading both CIM and Navigator. But although Navigator's upgrades are available for downloading, CIM upgrades must be ordered on-disk, because even in compressed form, the package is so huge that

it takes an hour or more to download.

CIM bears some eerie resemblances to the interface of CompuServe's heaviest competitor in the Mac market, America Online. Like AOL, CIM has a customizable Favorite Places menu item, in and out baskets, and extensive context-sensitive help, and it lets you see who's on-line with you and communicate with that person. The most important difference, however, is that, unlike that of AOL and Prodigy, CompuServe's software is not free — although CIM should be given away. Better yet, CompuServe should pay you to use it.

### The Bottom Line

CompuServe would have you believe that Navigator and CIM are complementary and that you need them both. I believe that if you are new to CompuServe, CIM will help you explore it and get the hang of how it works. If you find your monthly bill climbing past \$30 or \$40, it would be wise to invest in Navigator and take the time to learn how to use it. Considering CIM costs about \$40 (including a \$25 usage credit), you'd be better off not buying CIM at all and instead learning how to use CompuServe the old-fashioned way.

— Ken Gruberman

[MacUser and MacWeek maintain their on-line service, Zmac, on CompuServe. CIS offers a Zmac edition of CIM for \$3. — Ed.]

## Get Info

### CompuServe Navigator

\*\*\*

**Published by:** CompuServe, 5000  
Arlington Centre Blvd., Colum-  
bus, OH 43220; (800) 848-8199.  
**Version:** 3.04.

**List Price:** \$99.95.

### CompuServe Information Manager

\*\*\*

**Published by:** CompuServe, 5000  
Arlington Centre Blvd., Colum-  
bus, OH 43220; (800) 848-8199.  
**Version:** 1.0.3.

**List Price:** \$39.95 (Mac  
Membership Kit includes CIM and  
\$25 usage credit.); current  
members can buy CIM for \$24.95  
with a \$15 usage credit.



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## NEW ON THE MENU REVIEWS

### CONNECTIVITY

# Software Bridge for the Mac and Word for Word/Mac

**Two new products challenge DataViz's supremacy in PC-to-Mac file conversion.**

Now that DOS-based machines and the Mac are coexisting peacefully, the need for file translators such as AFE (Apple File Exchange) and DataViz's MacLinkPlus is higher than ever.

Two attractive newcomers — Software Bridge for the Macintosh and Word for Word/Mac — are the latest entrants into the field, and both beat MacLinkPlus, the market leader, in some respects.

#### Software Bridge for the Macintosh

Software Bridge is not an application but, rather, a \$129 collection of file translators for use with AFE, the file-transfer utility that Apple ships on the system disks that accompany every Mac. Accordingly, it has no exotic hardware or RAM requirements — the translators work with AFE on any Mac from a lowly Plus on up.

Software Bridge comes with a special installer (which can interact badly with viral protection such as SAM Intercept's floppy-scan feature) that lets you install only those translator pairs that will be of use to you — a nice touch, because the complete collection takes up nearly 2 megabytes of disk space. You then place the file that the installer creates into the same folder as AFE. Launch the Apple utility, and you're up and running, with the additional translators displayed on the Mac to MS-DOS and MS-DOS to Mac menus.

AFE comes with few translators — essentially it enables binary transfers of files from DOS-formatted disks to the Mac desktop. Software Bridge brings added translating powers with translators for 3 Mac word-processing formats (Microsoft Word, WordPerfect, and MacWrite II) and more than 20 popular DOS formats, including WordPerfect, WordStar, and DisplayWrite. The collection — limited by AFE — permits Mac-to-Mac, Mac-to-DOS, and DOS-to-Mac conversions but balks at DOS-to-DOS transformations.

The main advantage of the Software

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Translating the same WordPerfect 5.0 file to Word 4.0 produced surprising results. MacLinkPlus (top) did the poorest job, even missing the multiple-column formatting. Software Bridge (middle) and Word for Word/Mac (bottom) produced much more accurate translations.

Bridge approach, in comparison with Word for Word/Mac's stand-alone strategy, is that it works within AFE, combining binary-file transfer and file-format translation in a one-step process — you don't have to run a second program after you've made the transfer with AFE. But if you transfer your files through something such as a TOPS network, the advantage is largely diminished. Software Bridge/AFE also automatically determines what translator(s) to use in any given case.

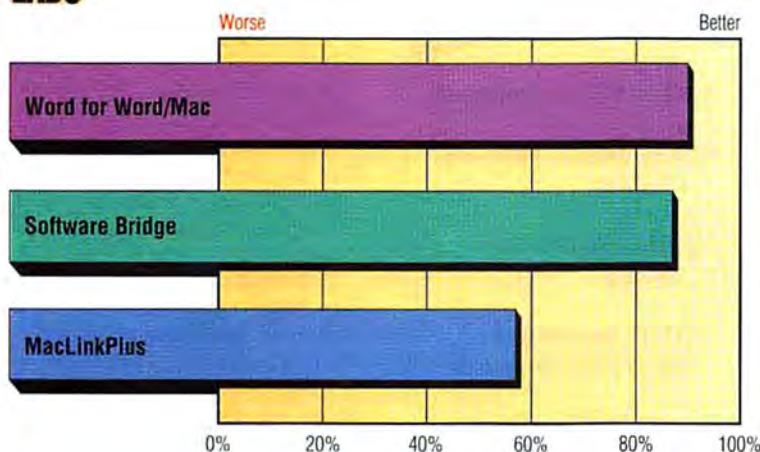
On the minus side, it cannot perform DOS-to-DOS conversions and its manual could stand a rewrite. Most disturbing is that it cannot translate Word 4.0 documents saved with Fast Save enabled. It sacrificed half a mouse from its rating for this flaw. Finally, it lacks support for graphics and spreadsheets — something Word for Word/Mac has.

#### Word for Word/Mac

Word for Word/Mac takes a different approach to DOS-Mac file conversion — it operates as a stand-alone application.



# Both Challengers Beat the Champ



In a test of accuracy with MacLinkPlus, the dominant player in file translation, Software Bridge for the Macintosh and Word for Word/Mac finished almost neck and neck, both beating MacLinkPlus handily. The test document was a complex WordPerfect 5.0 file with 30 formatting items, such as multicolumn layout, point-size changes, footers and headers, and style changes, that was translated into Word 4.0 format. Word for Word/Mac missed superscripting footnote numbers, font changes, and small caps. Software Bridge overlooked centered headings, font changes, right justification, and small caps. MacLinkPlus' performance was dramatically inferior compared with that of its challengers.

You simply drag it and as many of the more than 20 format translators as you require to your hard disk or working floppy.

The \$149 program's origins in the PC world are evident from time to time in the manual. For example, it informs you that you'll need at least a Mac Plus with 256K of RAM. And for a program that has been, in the manual's own words, "designed especially for Macintosh users," it's interesting to note that there are absolutely no Mac screen dumps illustrating the documentation. The "screens" have been drawn in a decidedly non-Mac graphics environment and dropped into the text.

Aside from these quibbles, Word for Word/Mac is a straightforward program for translating files in and out of various formats. Unlike AFE, it does not support the transfer of files from non-Mac disks — you have to use AFE (or some other arrangement) to bring the files over to the Mac before Word for Word/Mac can spin its Mac gold from DOS straw.

The interface is clean and easy to understand. You select files from the source disk or folder, specify a destination folder, and add as many files as you like to the batch being readied for translation.

You have to select the source and destination formats yourself from pop-up menus.

Unlike Software Bridge, Word for Word/Mac supports DOS-to-DOS translations as well as various graphics and spreadsheet formats. One of the program's greatest strengths is its ability to tag formats in the translated document that it recognized but was unable to convert from the original file. It surrounds the troublesome area of text with three-letter codes. For example, <BRV> "body text" <ERV> might mark text that was in reverse video in the original document.

Word for Word/Mac also offers graphics support in some of the Mac-to-Mac conversion modules, but I found that graphics were sometimes resized or positioned differently in the translated files.

## The Bottom Line

Until the appearance of these two packages, DataViz's MacLink products held sway. DataViz still offers a far greater variety of program formats, but it also offers less — at least when it comes to word-processing documents. Both Software Bridge and Word for Word/Mac translations of word-processed files retain far more of the original formatting than do

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NEW ON THE MENU

## REVIEWS

MacLinkPlus translations. Headers, footers, footnotes, and even multiple columns are translated nearly flawlessly in both programs.

Their speed and accuracy are essentially the same, with one exception. I experienced problems with Software Bridge's WordPerfect 5.1-to-Microsoft Word 4.0 translators on two different files. The files crashed Word when I tried to open them. Saving the files in WordPerfect 5.0 format and retranslating them solved the problem.

Both products provide better translations than do the MacLinkPlus translators — at least if you're dealing primarily with the most popular word processors — and they do so at lower prices. I suspect many people will find it more convenient to go the Software Bridge route, because using AFE combines transfer and translation in one step. But Word for Word/Mac sports some bells and whistles such as the embedding of exception codes, the automatic renaming of translated files, and support for graphics that may make the added step involved worth it. Both products are valuable for anyone who must frequently bridge that gap between Mac and DOS machines, a situation that's becoming more and more common. Both do the job, but they fall short of the ultimate: invisible translation, regardless of application. When that happens, the barriers between DOS and the Mac will disappear entirely.

— Gregory Wasson

## Get Info

### Software Bridge for the Macintosh

\$\$\$½

**Published by:** Systems Compatibility, 401 N. Wabash, Suite 600, Chicago, IL 60611; (312) 329-0700.

**Version:** 1.0.

**List Price:** \$129.

### Word for Word/Mac

\$\$\$

**Published by:** Software Toolworks, 60 Leveroni Court, Novato, CA 94949; (415) 883-3000.

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**List Price:** \$149.

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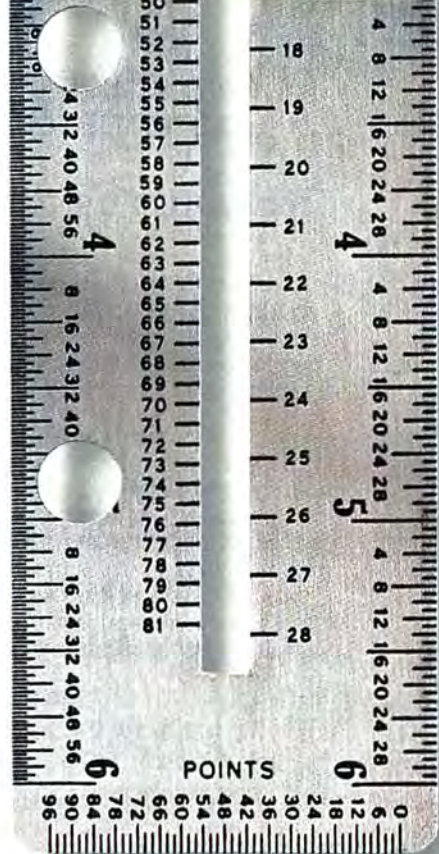
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## MULTIMEDIA

# MacroMind Director

**MacroMind's latest release takes animation beyond playback and into interactivity.**

Since coming on the market, MacroMind Director has defined both the high and low ends of the Mac animation spectrum. Aside from Director's predecessor (VideoWorks II) and Electronic Arts' Studio/1, the animation world has been woefully lacking in applications offering an entry into multimedia. This deficit seems about to change, however, with the release of several new products, including Electric Image's ElectricImage Animation System and Linker Systems' Animation Stand, and the distribution of the French package FilmMaker by Paracomp. Still, Director has carved out a significant niche for itself, and it's unequaled when it comes to interactivity.

## Beyond Animation

MacroMind's latest version of Director, version 2.0, lets budding animators expand into the world of complex interactive programs. By writing routines in Director's scripting language, Lingo, animators can not only develop interactive animations that until now have been possible only through scripting in HyperTalk or SuperTalk or by programming in some other language but they can also control peripheral devices such as CD-ROM drives, VCRs, and videodisc players.

MacroMind Director uses two separate environments, Studio and Overview, to create its animations. Generally speaking,

Overview is the shorthand version of Studio and offers an icon-based setting for sequencing various graphics and sounds. Overview offers the same range of transitions as are available in Studio, and you can import sounds from a sound application or opt for several stock sounds that ship with Director.

You create complex animations in the Studio environment by generating images in the Paint window or by importing paint, PICT, PICS, or Scrapbook files and then sequencing them. Director's paint program compares favorably with many stand-alone paint applications and also boasts some unique features that specifically support the design and execution of animation. You can use ink effects, such as transparent, ghost, and reverse, in various combinations to produce exotic effects, including sparkles, glows, and reveals.

As you complete each graphic frame, the program automatically introduces it into the cast, an archive in which it stores all visual elements for immediate access. You then drag cast members onto the

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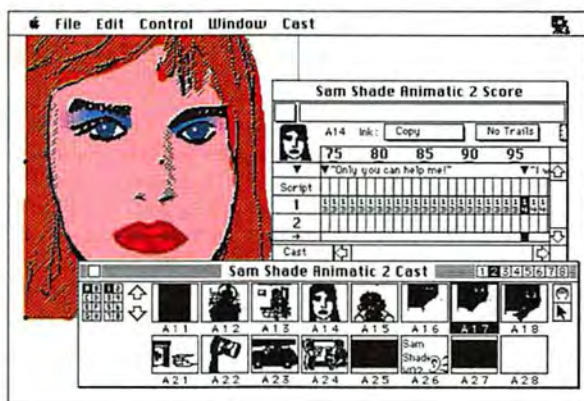
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stage and position them. What occurs on the stage, in terms of animated action, sounds, and transitions, is determined in the score.

You create Studio documents by layering graphics, text blocks, and sounds and adding timing and transitional cues to the editable score script. You can then set your document in motion by employing one of Director's several animation methods. You can move static images in real time across the stage to create motion, and the program automatically records the position of each step and enters it into the score. You can turn sequences of frames into a "film loop" and then dynamically place them on the stage while the loop runs. You can also slant, rotate, or otherwise distort individual frames over any number of frames, with Director providing the frames in between. In addition, you can add color cycling and palette animations to the frames.

The score looks like a spreadsheet and allows for layering of up to 24 different animated elements. Where an element



MacroMind Director 2.0's interface remains similar to that of earlier versions of this animation package. Visual elements that comprise an animated sequence are contained in the cast and are sequenced in the Score windows.

shows up on the stage relative to other cast members depends on where it resides within the hierarchy of the score. The more complex an animation, the slower it runs, so MacroMind offers Accelerator (\$195), which lets you run even a complex animation at the speed you desire.

You can cut, copy, and paste score elements to other layers and positions on a time line with complete ease.

### Speaking Lingo

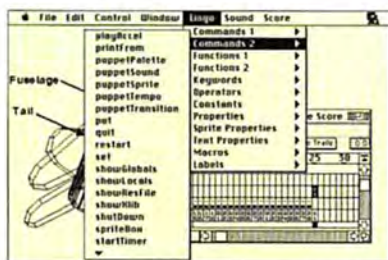
You create interactive scripts in the score environment by using the HyperTalk-like language Lingo. The script determines which section of the score will run and what will happen when you trigger an event.

One channel of the Score menu, the Lingo Scripting channel, is for embedding commands. You can either position

# got it made in the shades.







MacroMind Director 2.0's biggest addition is a HyperTalk-like scripting language called Lingo. Lingo commands are contained in an extended pull-down menu, negating the need to memorize the command set.

script commands in the score so that they are initiated at a given time or attach them to an object so that the desired action occurs when you click on that object.

Director 2.0 includes several simple tutorials that demonstrate Lingo's basic operating principles. All commands, function keys, and operators are available from an extended pull-down menu. However,

you do need to memorize the rigid structure that your scripts must hew to if they're going to do what you want them to. Because Lingo is very much like HyperTalk, the more familiar you are with HyperCard scripting, the quicker you'll be able to start creating your own Director scenarios. The manual has full descriptions of all Lingo commands and functions, and if all else fails, the package includes a sampler, The Apartment, that contains models of different kinds of Lingo-driven animations.

One of Director's most satisfying aspects is that it lets you increase a script's complexity without abandoning the original. For example, you can present, discuss, and modify simple animated sequences; refine them into a finished linear presentation; and then develop them further into a complex interactive presentation simply by building on the original score.

#### The Bottom Line

There are a few things wrong with Director. Its Paint layer creates bit-mapped images only (except for text blocks) — an

additional Draw layer would be a big improvement. Also, because the Score and Cast windows can obscure the stage work space, the screen can get cluttered in a hurry — you would probably be better off if you were to use a multiple-monitor setup.

With those few complaints and until some upstart proves otherwise, MacroMind Director is still the only serious game in town.

— Bill Camenga

### Get Info

#### MacroMind Director

★★★★½

**Published by:** MacroMind, 410 Townsend Street, Suite 408, San Francisco, CA 94107; (415) 442-0200.

**Version:** 2.0.

**List Price:** \$695.

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VOL. III SPRING, 1990 WANDERING TOURS LTD.

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A large barrier reef runs parallel to the Quintana Roo coast, protecting the lagoon from the open sea. Basically it creates a gigantic underwater playground, chock full of Caribbean underwater goodies which attract divers from all over the world.

For the archaeology buffs out there, Akumal is 15 km from Tulum. For the rest of us that means it's close to one of the few walled Mayan ruins. Xelha is another 5 km, and even the amateurs among us will want to slip into masks, snorkels, and fins to check out this natural unspoiled water aquarium.

In Mayan lingo, Akumal means "Place of the Turtle" not because it's so laid back, but because giant green turtles have come ashore since the dinosaur days to lay their eggs in the warm sands of the Caribbean.

Surrounding Akumal are lush jungles and thick coccol groves. Bright red bromeliads bloom high in the trees during early spring, sustaining themselves on rain, dew and humidity. While checking out bromeliads, you will probably see it's cousin, the orchid.

Along the pourous sand of the Akumal beaches, you'll find lots of really neat stuff: conch shells, baby red seaweed, coconuts sprouted after soaking in the sea for months, and crabs of all sizes and colors.

**This month's featured destination:**  
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Relax amidst the long stretches of wind bent coconut trees which set off the blazing white sands of Akumal's sweeping beaches.



# Claris CAD

**A major upgrade makes Claris CAD a smart choice.**

The difference between drawing and drafting is largely a matter of precision. An engineering or architectural drawing has to convey the designer's intention so exactly that a construction foreman or a machinist years later, halfway around the world, can build it. The challenge for programmers of computer-aided-drafting software is to analyze drafting skills that require manual dexterity and years of practice to develop and capture them in a few keystrokes and mouse clicks. Claris CAD 2.0 is a highly refined expression of one way to do this on a Mac.

The original version of Claris CAD

introduced methods and modifiers, which controlled the operation of drawing tools. The circle tool, for example, can be used in the default corner-to-corner method or the alternative center-to-circumference method. Modifiers are geometric constraints that can snap your circle's center to the endpoint of a line or make the circle tangent to one side of a rectangle.

Claris CAD 1.0 was a solid, efficient 2-D drawing program, instantly familiar to MacDraw users, but it suffered in comparison with cheaper, more feature-rich packages such as Canvas (Deneba) and Dreams (IDD). The release of Ashlar Vellum, with its radical, intelligent Drafting Assistant, made Claris CAD seem positively lame in comparison.

## Guidelines

Competition breeds innovation, and along with dozens of other new features, Claris CAD 2.0 now includes its own version of Vellum's Drafting Assistant, called Graphic Guide, an aid to the precise location and construction of geometric

features. The Graphic Guide has three components: the Guideline, the Dynamic Modifier, and the Preview Cursor.

The Guideline is a pair of full-screen cross hairs — dotted horizontal and vertical construction lines — that automatically snap to object endpoints, midpoints, corners, and centers as you move the cursor around a drawing. This is helpful when you need to align new geometry with previously drawn features that do not lie on regular grid points. A Preferences dialog box adjusts the sensitivity of the Guideline, and you can toggle it on and off with the G key.

The Dynamic Modifier evaluates objects near the cursor in relation to your currently selected tool, automatically choosing an appropriate modifier. If you're using the line tool, for example, and the cursor is near the center of a circle, the program automatically selects the Center modifier. In effect, the program "sees" what you are pointing at and anticipates what you want. This is a great improvement over manual selection of modifiers,

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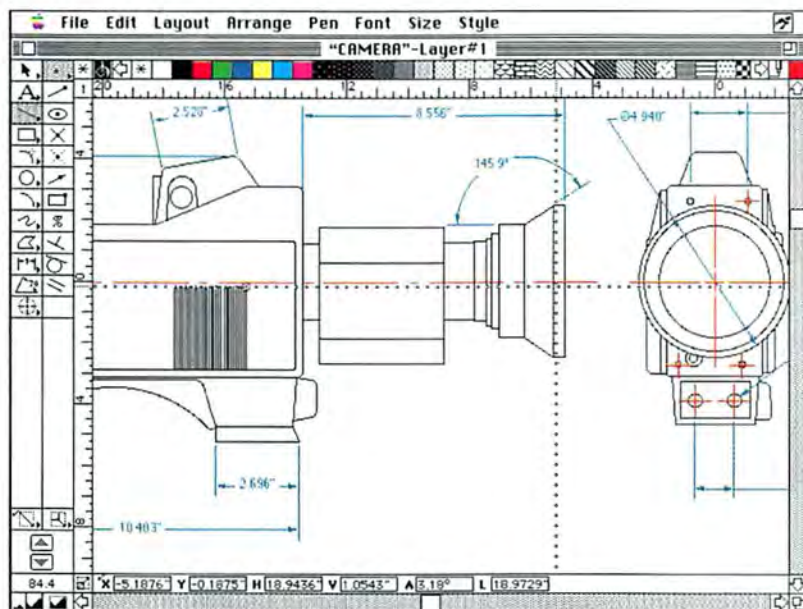
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Claris CAD 2.0 is a major upgrade. The most important new feature is the Graphic Guide (the diamond cross hairs), which gives the program some intelligence about the objects on screen. Here, for example, the Graphic Guide has found the midpoint of a line.

which tends to interrupt the natural flow of drafting.

The Preview Cursor is a tiny icon attached to the cursor to indicate which modifier is currently active. Point near the circumference of a circle, and the cursor displays the tangency symbol; point near the center of the circle, and you see the object-center symbol; and so on.

Claris CAD 2.0 requires 2 megabytes of RAM, which shuts out low-end users but is less demanding than Vellum's hunger for 4 megabytes. The program is usable on a 9-inch screen, but the proliferation of windows and floating palettes is such that a bigger monitor is far more productive for serious drafting. On systems without a floating-point coprocessor (MC68881 or 68882 chip), Claris CAD's performance is decidedly sluggish. The application itself takes up more than 1,700K on-disk, and the comprehensive HyperCard-based help system needs almost another 800K. The program supports plotters made by Hewlett-Packard and Houston Instruments.

# Pigments for your imagination.

**HP color printers let you draw splashy color from your Macintosh.**

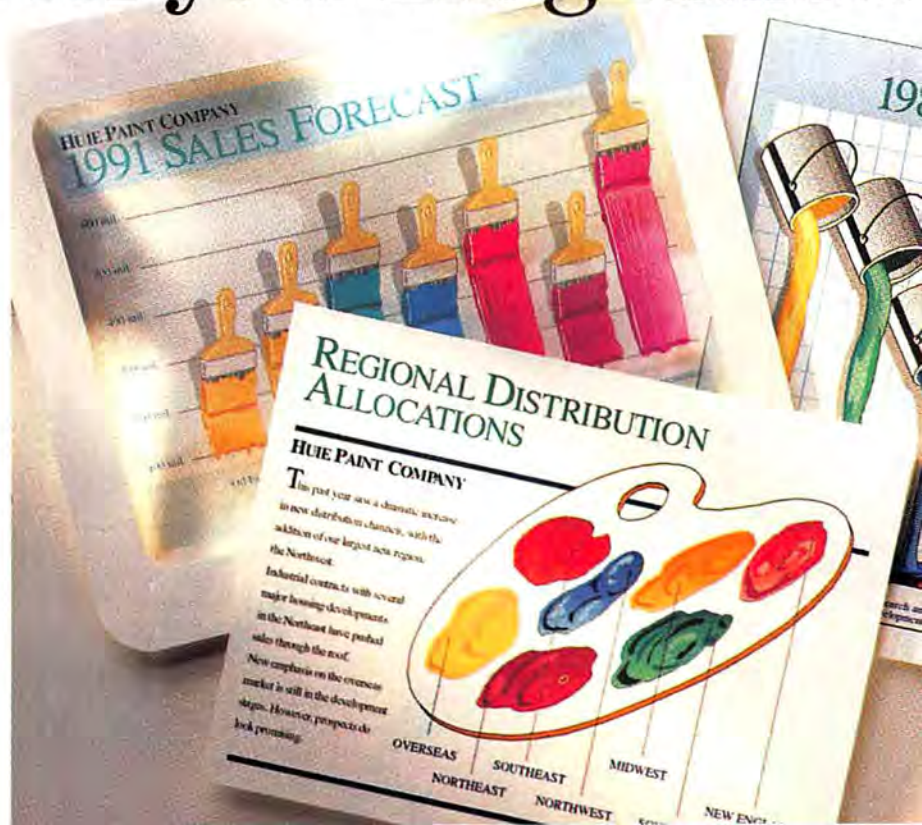
Entertain your thoughts with HP's PaintJet and PaintWriter XL color printers. Both are fully Mac-compatible and let you use all Quickdraw-based software applications. That means high-quality Macintosh II output in 16.7 million colors.

Print on paper or transparencies with 13 scalable outline fonts. And for shared use, the PaintWriter XL offers AppleTalk, faster speed, and auto sheet feed. For sample output and the name of your authorized HP dealer, call 1-800-752-0900, Ext. 1167.

There is a better way.



**HEWLETT  
PACKARD**





The package includes a 47-minute videotape, and once you've gotten past the introductory marketing fluff, it contains some of the clearest and best-designed instructional video I have seen for any computer software.

A stand-alone program, Graphics Translator, which converts Claris CAD drawings to or from industry-standard formats such as IGES and DXF, is available as a separate \$299 package. Only a minority of users require this capability, but some competing products include it free.

#### The Bottom Line

Claris CAD is a good choice for entry-level or midrange 2-D mechanical drafting. It's particularly useful for engineers who have little formal training in conventional drafting, but it should be well received by many professional drafters who are willing to make the transition from the pencil and drafting board to the mouse and plotter. Architects will appreciate the new wall tools for drawing double parallel lines, and mechanical engineers will be

impressed by the elegant implementation of the ANSI-standard Geometric Dimensioning and Tolerancing system.

Currently, Claris CAD's closest competition comes from Ashlar Vellum and the just-released MiniCad+ 3.0. Compared with Vellum, Claris CAD is slightly cheaper and requires significantly less memory. It also seems to be faster at updating the screen and performing many drawing functions. In addition, Claris CAD has the ability to export object attributes to a database file, but this is not nearly as comprehensive as MiniCad+'s ability to generate a bill of materials (something very important to architects and contractors).

Claris CAD is a snap to master if you have any proficiency with MacDraw II; the program can even open and convert MacDraw II documents. Unlike other Claris products, it lacks an integrated spelling checker. The very limited support for color (only the original eight QuickDraw colors plus dithered patterns) makes it less suitable for interior designers,

landscape architects, and those who need precise control over nuances of tone and shade. Claris CAD is still an elegant package, and with the addition of the Graphic Guide, Claris has clearly taken a major step forward. It has strengthened the program's drafting capabilities without cluttering the interface and making the package a burden to use. If your primary interest in a mechanical drawing package is drawing itself, Claris CAD is an excellent choice.

—Mike Markowitz

#### Get Info

##### Claris CAD

\*\*\*\*\*

**Published by:** Claris, 5201 Patrick Henry Drive, Santa Clara, CA 95052; (408) 727-8227.

**Version:** 2.0.

**List Price:** \$899.



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SuperANOVA 1.1 (for Plus/SE or II) ea. 309.  
5907 Statview II/SuperANOVA Bundle ... 569.

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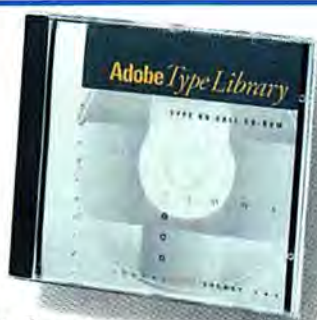
6948 File Force 1.0.1 ... 249.  
5618 4th Dimension 2.1 ... 489.  
4024 4th Dimension Runtime (4 user) ... 249.  
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1125 MacProject II 2.1 ... 365.

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6268 Grammatik Mac 2.0 ... 50.

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8609 if:X Payroll Tax Assistant ... 86.

7499 if:X Forms Designer 1.0 ... 169.

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6957 Adobe Type Reunion 1.0 ... 38.

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8794 Adobe Type on Call ... 59.

6053 Adobe Plus Pack ... 109.

6156 Adobe Plus Pack/ATM ... 159.

6098 TypeAlign for ATM 1.0.4 ... 59.

6985 Adobe ATM/TypeAlign Pack ... 89.

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5001 StreamLine 1.2 ... 225.

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6674 Personal Press 1.0 ... 205.

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7088 PageMaker 4.0 ... 499.

8054 Design Team (PM, FH & PrePrint) ... 889.

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6499 Metamorphosis 1.5 ... 85.

1195 Fontographer 3.2 ... 249.

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6281 TypeStyler 1.5.2 ... 115.



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6365 UltraPaint 1.0 ... 125.

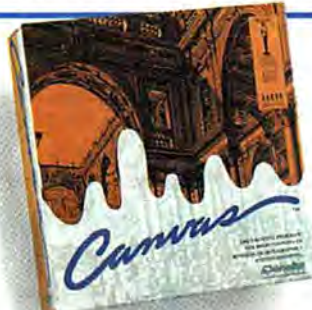
1769 Canvas 2.1.1 ... 189.

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8056 Studio/32 . . . 449.

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6770 MacRecorder Voice Digitizer. . . 89.  
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## Innovative Data Design

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4707 Dreams 1.1 . . . 349.

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2621 Ready Set Go! 4.5A . . . 165.  
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7555 MapArt (EPS). . . 99.  
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8767 Multi-Ad Creator . . . 695.

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7466 Process Color Imaging Guide. . . 49.

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3446 The Curator 1.05 . . . 87.

## ★Springboard ... 30 day MBG

3530 Certificate Maker 2.0. . . 22.

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7773 StrataVision 3D 1.5.5. . . 369.

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6518 ATLAS•MapMaker 4.5 . . . 369.

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3380 PixelPaint 2.1 . . . 149.

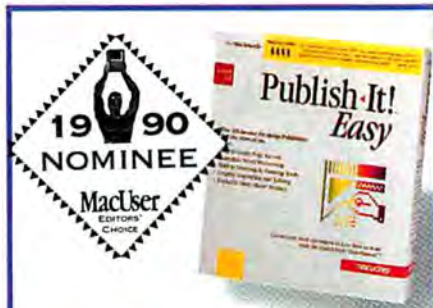
5625 PixelPaint Professional 2.0 . . . 465.

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8172 Mariah 1.0 . . . 94.

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5167 EPS Business Art. . . . . special 69.  
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6169 Shortcut 1.5 . . . 46.

6740 StuffIt Deluxe 2.0 . . . 63.

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5100 SuperCard 1.5 . . . 199.

## ★ASD Software ... 30 day MBG

7085 FileGuard Extended 2.5 (1 user) . . . 139.

7422 FileGuard Extended 2.5 (5 user) . . . 349.

7423 FileGuard Extended 2.5 (10 user) . . . 579.

## ★Baseline Publishing ... 30 day MBG

7783 INIT Manager 1.0 . . . 35.

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5737 After Dark 2.0 . . . 22.

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2269 QuickDEX 1.4D . . . 34.

7443 A.M.E. 1.1.2 . . . 159.

## ★CE Software ... 60 day MBG

4689 MockPackage Plus Utilities 4.4 . . . 31.

1727 CalendarMaker 3.0 . . . 31.

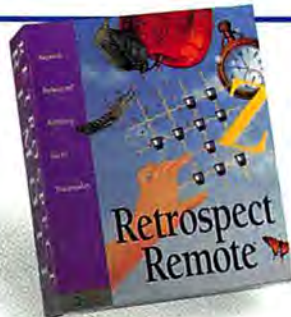
6278 DiskTop 4.0 . . . 63.

7518 Alarming Events 1.0 . . . 85.

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6122 Virtual 2.02 (for Mac II, incl. PMMU) . . . . . 188.
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5255 Retrospect 1.2 . . . . . 148.  
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- ★Design Science ... 30 day MBG**  
7887 MathType 2.0 . . . . . 89.
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7974 ClickChange 1.0 . . . . . 41.  
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3955 Suitcase II 1.2.6 . . . . . 49.  
8284 SuperSpool 5.0 . . . . . 62.  
8286 SuperLaserSpool 2.02 . . . . . 93.
- ★Foundation Publishing ... 60 day MBG**  
6701 HyperSpeller 1.0 . . . . . 29.
- ★HyperGlot ... 30 day MBG**  
8259 RefBase 1.0 . . . . . 105.
- ICOM Simulations**  
4084 On Cue 1.3 . . . . . 35.  
4085 TMON 2.8.4 . . . . . 86.
- Individual Software**  
Power Macros Excel or MS Word . . . . . ea. 26.  
4719 101 Scripts & Buttons HyperCard 1.2 . . . . . 26.
- ★Insight Development ... 30 day MBG**  
6171 MacPrint 1.23 . . . . . 94.
- ★JAM Software ... 30 day MBG**  
7558 MacList 1.0 . . . . . 40.  
6089 Smart Alarms 3.0 w/Appt. Diary 3.1 . . . . . 63.  
6088 Smart Alarms 3.0 (1-4 users) . . . . . 125.  
6087 Smart Alarms 3.0 (5-8 users) . . . . . 187.

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- 5457 QuickLock 2.0 . . . . . \$57.  
2591 The NightWatch 1.03 . . . . . 85.  
6134 MacSafe II . . . . . 107.
- ★Kiwi Software ... 60 day MBG**  
6267 KiwiEnvelopes! 3.1 . . . . . 33.
- ★Loop Software ... 30 day MBG**  
5442 PictureBook 3.2 . . . . . 39.
- ★Magic Software ... 30 day MBG**  
7267 AutoSave II 2.0 . . . . . 28.  
7270 Backmatic 2.0 . . . . . 50.
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8562 Complete Undelete . . . . . 48.  
4803 Virex 2.82 . . . . . 56.  
8561 911 Utilities . . . . . 89.
- ★Microlytics ... 60 day MBG**  
2732 GOfar 2.0 . . . . . 45.
- ★Microseeds Pub. ... 60 day MBG**  
7068 INITPicker 2.0 . . . . . 35.  
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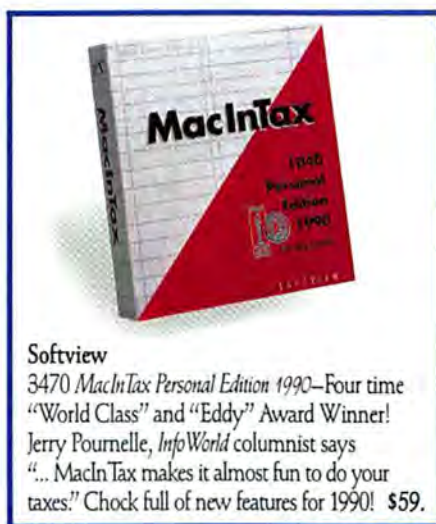
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- 5774 NetTrek—The Real Version 3.0 . . . 34.

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- 8364 DataLink/Mac . . . 209.

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4866	Timbuktu/Remote 2.0	123.
6371	Timbuktu/Remote Access Pack	845.
8707	Liaison 3.0	259.
6273	PhoneNET StarConnector 10-Pack	129.
4869	PhoneNET Connector 10-Pk (DIN-8)	198.
2206	PhoneNET StarController 300	825.
6687	PhoneNET StarController-EN	1599.
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6768	MediaTracks Multimedia Pack	319.

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<b>Hayes</b>		
2300	Smartcom II 3.2	84.
2307	Smartmodem 2400	349.
5991	V9600 Baud Modem	689.

## Information Presentation Tech.

8060	Personal Server Network (PSN)	108.
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## Insignia Solutions

7557	Access PC 1.0	62.
7058	SoftPC-AT/EGA Module	125.
4089	SoftPC 1.3	245.

## Intel Corporation

5119	2400EX Modem	179.
6420	2400EX MNP Modem	229.
6650	2400EX MNP with QuickLink II	249.

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8580	DataClub 1.1 (10 user)	539.

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7588	Drive 360	249.
7590	Drive 1200	249.
5632	Drive 2.4 (includes FastBack II)	325.

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7465	CarbonCopy Mac (Twin Pack)	169.
8027	MacModem V.32	689.

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3000	TurboNet ST (DIN-8)	30.
6751	TurboNet ST (12-Pack)	279.
6272	NuvoLink SC	389.

## ★Orchid Technology ... 30 day MBG

6949	OrchidFAX Modem	429.
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## ★Practical Peripherals ... 30 day MBG

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5285	PM2400SA MNP Modem	\$209.
7934	PM9600SA Modem	489.
3089	Mac Communications Pack 1.5	225.

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8348	24/96 Minifax	199.
8349	Maxfax	295.
8709	2400M Plus	249.
8738	9600M Plus	699.

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3444	NetSerial	275.
4347	NetBridge	339.
4942	TeleBridge	339.
3443	NetModem V2400	429.
6917	NetModem V.32	1395.
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8189	FastPath IV	1899.

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4598	TOPS Flashbox	119.
3720	TOPS Flashcard	155.
6264	TOPS Networking Bundle 3.0	187.

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8337	CommGate	379.

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6618	VersaTerm 4.1.1	88.
6619	VersaTerm-PRO 3.1.1	174.

## ★Traveling Software ... 60 day MBG

3729	LapLink Mac III Connectivity Pac	93.
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4476	OmniPage 2.1	495.
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7452	LabelWriter Labels (12-Pack)	49.

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6901	Switchboard (modular keyboard)	159.
	MAC-101 Keyboards	ea. 129.

## ★DayStar Digital ... 30 day MBG

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8586	40 MHz PowerCache IIci	949.
8585	50 MHz PowerCache IIci	1689.
8583	SCSI PowerCard	949.
	25 MHz PowerCard 030 (II or IIX) ea.	1095.
8572	25 MHz PowerCard 030 (IIcx)	1495.
	40 MHz PowerCard 030 (II or IIX) ea.	1399.
8566	40 MHz PowerCard 030 (IIcx)	1749.
	50 MHz PowerCard 030 (II or IIX) ea.	1895.
8563	50 MHz PowerCard 030 (IIcx)	2269.

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6256	PrintLink Collection 4.0	59.
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3298 3 1/2" HD Disks 1.44 Meg (10) . . . . . 19.  
6375 3 1/2" HD Disks 3 Pak (30) . . . . . 49.  
8185 QD2040 40 MB Data Cartridge . . . . . 19.
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2793 3 1/2" HD Disks 1.44 Meg (10) . . . . . 21.
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1115 LaserWriter II Toner Cartridge . . . . . 105.
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4864 Disk Labels 3 1/2" (Qty. 250) . . . . . 13.



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8037 Freedom of Press Light 3.0 (17 fonts) . . . . . 56.

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4865 Address Labels 3 1/2" x 1 5/16" (3750) . 15.  
4811 Transparencies 8 1/2" x 11" (Qty. 50) . 22.  
8667 Index Maker 8 Label Pack . . . . . 19.

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2267 The Macintosh Bible (3rd Ed.) . . . . . 19.  
8374 The Macintosh Bible (3rd Ed.) w/disks 25.

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2566 System Saver Mac (platinum) . . . . 63.  
6763 SE Radiation/Anti-Glare Filter . . . . 52.  
5064 Apple Color Monitor Polarizing Filter 63.

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- 4623 Solid Oak Disk Case (holds 90 disks) 32.  
8795 2 Position Switch Box . . . . . 39.  
8796 4 Position Switch Box . . . . . 59.

### ★ Mobius Technologies ... 60 day MBG

- 4470 Fanny Mac QT . . . . . 55.

### ★ Moustrak ... 60 day MBG

- 2694 Moustrak Pad (standard 7" x 9") . . . 8.  
2692 Moustrak Pad (large 9" x 11") . . . . 9.  
2693 Moustrak Pad L/F (large 9" x 11") . . 10.

### Ribbons

- 3255 ImageWriter II Ribbon Black . . . . . 4.  
3261 ImageWriter II Ribbon Multi-4-Color . 9.

### ★ Sopris Softworks ... 60 day MBG

- 4014 High Trek Mac SE & Ext. Kybd. Case 69.  
4861 SE Protection Pack (std. keyboard) . 65.  
4862 SE Protection Pack (ext. keyboard) . 75.

### ★ Targus ... 60 day MBG

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2593 MacVision 3.1 . . . . . 259.

## Kodak

- 6730 DICONIX M150 Plus Printer . . . . . 489.

## ★Kraft Systems ... 60 day MBG

- 7519 KM30 ADB Joystick . . . . . 42.

## ★Logitech ... 30 day MBG

- 5082 ScanMan Mac Model 32 . . . . . 339.

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6690 14" Color Monitor with Micron Xceed  
for SE/30 (640 x 480) . . . . . special 849.

## MegaGraphics

- 16" 8-bit System for SE/30 or II. ea. 2695.  
7841 16" 24-bit Color System for Mac II 4995.  
19" Rival Sys. SE, SE/30, or II. ea. 1269.  
19" 8-bit System for SE/30 or II. ea. 4395.  
7840 19" 24-bit Color System for Mac II 6795.  
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- 7560 Trackball ADB . . . . . 69.  
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ClickChange



Personality



ClickChange and Personality are cdevs that customize your Mac's interface. Both run on the Mac Plus and later machines (the programs are more enjoyable on color-equipped models) and require System 6.0.2 or later. As ClickChange and Personality perform approximately the same functions, you'll want one or the other but not both.

ClickChange and Personality are extremely easy to use; you probably won't even look at the manuals. Both let you modify window borders, title bars, and text; change the color of the menu bar, menu text, and menu background; alter the appearance of scroll bars and dialog-box buttons; assign sounds to Mac events such as startup, shutdown, disk insert, and disk eject; and choose from a variety of cursors.

Although they are similar in their functions, ClickChange is clearly the more flexible and complete package. It lets you select static and animated cursors, comes with a library of more than 40 cursors, and includes a cursor editor. Personality provides only eight nonanimated cursors. ClickChange has a wider selection of window, scroll-bar, and button choices than does Personality, and it lets you name and save your color schemes as sets. With Personality, you change colors one attribute at a time, and you can't save them.

ClickChange comes with 30 excellent sounds, all of which are short enough to serve as your beep. Personality doesn't include any.

The one area in which Personality excels is in modifying menus—it can change the menu font and create 3-D menus; ClickChange can't.

Both programs handle conflicts with your applications, INITs, or other cdevs the same way: You can selectively disable features (such as special cursors, scroll bars, and sounds) in specific applications to solve conflicts that these features cause. Both products warn that incompatibilities may occur with some applications, but only ClickChange provides a "patcher" that lets you use custom cursors with Excel and FileMaker.

Picking the winner between ClickChange and Personality is a snap—it's definitely ClickChange. Although both

programs work as promised, ClickChange is more flexible and has many features not found in Personality.

This is completely subjective, but I think ClickChange creates better-looking interfaces. And although you probably won't do more than glance at the documentation, the ClickChange manual is more thorough and better written than Personality's docs.

Personality is a pretty good product, but you'll have more fun with ClickChange.

ClickChange, Dubl-Click Software, 9316 Deering Avenue, Chatsworth, CA 91311; (818) 700-9525. Version 1.0.3. \$89.95.

Personality, Preferred Publishers, 1770 Moriah Woods Blvd., Suite 14, Memphis, TN 38117; (901) 683-3383. Version 1.0.1. \$99.95.

—Bob LeVitus



DiskLock



Since I last looked at DiskLock (see review, May '90, page 97), Fifth Generation's security program has made impressive progress. It's still easy to use and sports some significant improvements.

To set up DiskLock, you start with an installer that places an INIT in your System Folder. You must also install the DiskLock DA, the program's front end, and drag FolderLock, a bundled utility, onto your hard disk. Restart your Mac, and you'll be prompted for the password that you specified during installation. You can't bypass this password prompt by starting up from a floppy.

The DiskLock DA lets you lock the drive when you leave your desk or shut down your Mac. You can configure DiskLock to auto-lock your Mac at shutdown, after an idle of a specified period of time, or if your Mac crashes. The DA also accesses FolderLock so that you can lock and unlock programs, files, and complete folders. You can set the DA to automatically close open files when you shut down.

The main improvements in this latest version include the ability to do background processing (a spreadsheet can be recalculating while the disk is locked and you are on break), protection from the trashing of locked files and folders, and DES support for people patient enough to use this encryption method (DiskLock also supports proprietary—and faster—encryption methods).

On the negative side, the program is still not as integrated as it might be. You have

to run a different bundled program to change the disk password or view the DiskLock log. You should be able to perform these tasks through the DA in much the same way that you access the file-locking controls of FolderLock.

DiskLock is basic in concept but probably more than adequate for most people. It doesn't offer customizable user levels, administrative functions, or a hierarchy of privileges, but it does keep the contents of your hard drive private—and it does so with ease.

Fifth Generation Systems, 10049 N. Reiger Road, Baton Rouge, LA 70809; (504) 291-7221. Version 2.0. \$189.

—Gregory Wasson



The String Quartet



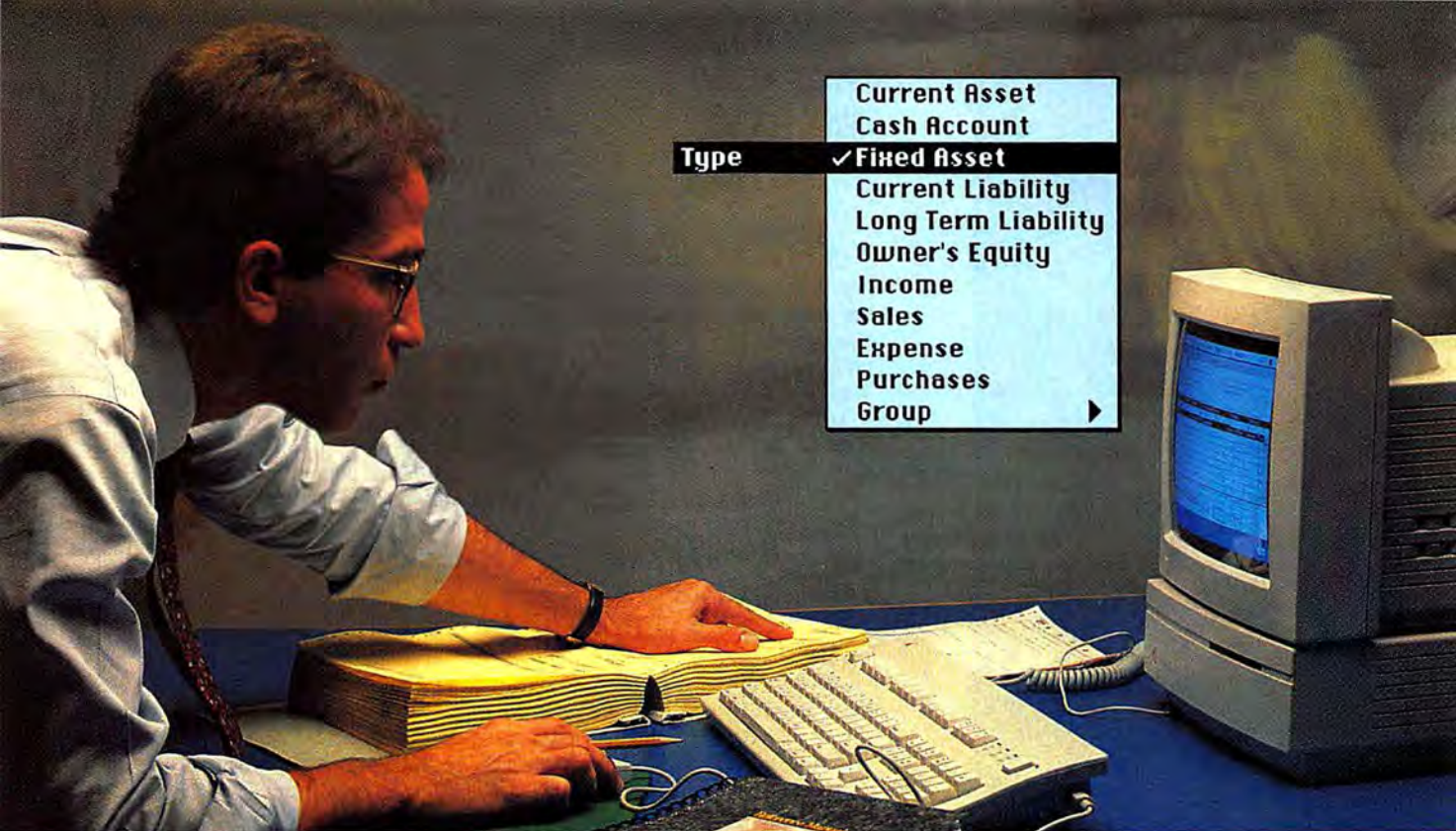
Warner New Media's second Audio Notes program (the first was Mozart's Magic Flute) tackles Beethoven's String Quartet No. 14, Op. 131, and does a fine job.

Warner New Media learned from its first effort, and its latest endeavor shows major improvements in three areas. The art direction is better adapted to HyperCard, and navigating through the program is much easier than it was with the Magic Flute (that the music fits on one compact disc makes a big difference here; the Magic Flute required switching among three discs). The most welcome improvement, however, is in ease of installation. Drag the HyperCard stack from the CD-ROM disc to your hard-disk drive, and you're off and running. Gone is the Magic Flute's absurd requirement that you rename your own Home card and install a custom Home card each time you use the program.

The annotations of the string quartet let users approach the piece from several different levels of musical sophistication. Plenty of separately recorded examples from the quartet itself and other pieces of music are included. In all, it's difficult to imagine a more appealing way of studying this music without taking up the cello, violin, or viola.

Although this program can run under HyperCard 2.0, some bugs did pop up when I ran that HyperCard version that didn't appear when I ran the package under HyperCard 1.2.5. As the program doesn't rely on any of HyperCard 2.0's new features, you should plan on running it with the older version (which is provided on the CD-ROM disc).





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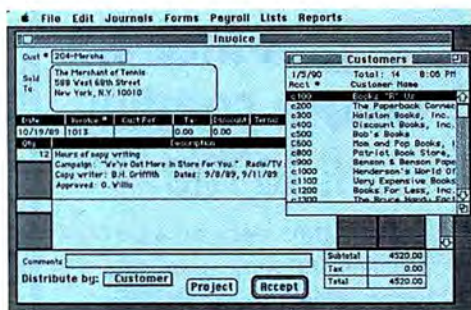
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— Jim Bradbury

## MacRAM Portable



How do you add memory to the Mac Portable's built-in megabyte? You buy some static RAM on a 3-x-5-inch card and slip it into the Portable's memory-expansion slot. A lot of users buy cards with 3 megabytes, bringing the total memory up to 4 megabytes. But the Mac Portable can use up to 9 megabytes — what if you need more RAM later? Do you throw away the 3-megabyte card and buy a new one that's bigger?

Not if you've got the MacRAM Portable from Applied Engineering. The first expandable memory card for the Portable, the MacRAM Portable card can hold anywhere from 1 to 8 megabytes. Memory is added 1 megabyte at a time in the form of pseudo-SIMMs — ultrathin memory modules that plug into the MacRAM. You must buy the modules from Applied Engineering, as real SIMMs don't fit in the tight space in the Portable.

Static RAM is more expensive than the dynamic RAM used in all the other Macs, but the Mac Portable requires it because static RAM uses very little power compared with DRAM. Pseudo-static RAM can be cheaper, but it gains its stability by stealing battery power. Applied Engineering uses true static RAM. With the MacRAM Portable installed, I noticed little additional drain on battery power, and I could open several applications at once without any problems.

The MacRAM Portable even comes with a grounding wrist strap to prevent electrostatic damage to the memory when you install it. For those who usually run MultiFinder, the MacRAM upgrade is a good investment. All in all, it's the most versatile way to upgrade memory in a Mac Portable.

Applied Engineering, 3210 Belt Line Road, Dallas, TX 75234; (214) 241-6060. \$499 (with 1 megabyte); \$350 per additional megabyte.

— John Rizzo



Screenshot is a Control Panel device that is invoked by a hot key of your choosing. Select various options from Screenshot's window, which contains four large buttons, a pop-up menu, and six check boxes below the menu. Click on the appropriate button to capture an entire screen (it works flawlessly with multiple monitors and large-screen displays), a portion of any screen, a specific window (a window, alert box, or dialog box), or a menu (either pull-down, pop-up, or hierarchical submenu).

Screenshot makes capturing a screen easy and precise: Click on the appropriate button, position the cursor over the item you want, and then click again. If it's a dialog box, for example, click anywhere inside the box and Screenshot grabs the entire box — and nothing else! There's no need to clean up the image later, as you don't capture any unwanted pixels.

Once captured, images can be pasted onto the Clipboard or placed in the Scrapbook. Alternatively, they can be saved to disk in PICT, paint, or Startup-Screen format. If you want, you can even send them directly to whatever printer is currently selected in the Chooser.

Although Screenshot's ability to capture only those screen items that you want is its most impressive feature, the utility also has six options that make the whole process even more convenient. First, color images (up to 24-bit) can be converted into black-and-white on the fly. Next, Screenshot lets you specify the name and disk location of captured images. Third, the Info Stamp feature automatically inserts the name of the active program and puts the current date and time immediately below the captured image. Fourth, you can specify whether the cursor appears in the image or not. Fifth, the Stick Around option keeps the Screenshot window open, so you can capture multiple images without repeatedly pressing the Screenshot hot key. And finally, the option I find the most useful — the ability to change the size of the image at the time of capture.

Screenshot is the best little screen-capture utility I've ever used. It's simple, powerful, and worth every penny.

Preferred Publishers, 1770 Moriah Woods Blvd., Suite 14, Memphis, TN 38117; (901) 683-3383. Version 1.1. \$59.95.

— Owen W. Linzmayer

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## NEW ON THE MENU QUICK CLICKS



### Hewlett-Packard 48SX Calculator



HP's most powerful, flexible, and expensive scientific calculator is also its first to incorporate a serial interface that supports file transfers with personal computers. With the addition of the Serial Interface Kit for Macintosh, the 48SX is also the first high-end scientific calculator that can share files with a Mac and use the Mac as a quasi-development environment for calculator software.

The 48SX includes powerful tools, such as a spreadsheetlike matrix editor and a graphical equation editor. Powerful graphics capabilities enhance an extensive equation solver as well as matrix and statistics routines. The 48SX file system stores programs and variables by name in a familiar hierarchical directory format. Sound, a real-time clock with alarms, infrared and RS-232 serial ports, and two expansion ports for RAM and ROM cards round out the impressive list of features. The 852-page manual set is crammed with excellent examples, tips, and reference material that only hint at the 48SX's capabilities.

The 48SX uses Columbia University's public-domain Mac Kermit application to transfer files to and from the Mac. HP-supplied downloadable programs and libraries provide useful enhancements to the 48SX, including a stopwatch and a simple appointment manager. GROBER, a small, HP-created Mac application, opens native 48SX graphics-object- (GROB) format files and pastes them into the Clipboard as monochrome PICT images that you can then paste anywhere.

Overall, the interface kit offers new, more powerful ways of using the 48SX, but it could stand improvement. A Mac-based 48SX program editor with a smart syntax checker and its own implementation of Mac Kermit would be a welcome addition. The documentation should come in a single printed manual instead of in numerous TeachText files.

The Serial Interface Kit, although flawed, amplifies the 48SX's power and flexibility and extends the capabilities of the 48SX to Mac users.

Hewlett-Packard, 1000 N.E. Circle Blvd., Corvallis, OR 97330; (503) 752-7736. 48SX, \$350; Serial Interface Kit, \$59.95.

— Jeff Pittelkau



### Editorial Advisor



For most writers, grammar handbooks are anathema. No one likes wading through a dense reference book, looking for the proper use of an absolute phrase or nonrestrictive appositive. Editorial Advisor is a grammar handbook on a HyperCard stack that you can search on-line, and that's where the problems start.

Editorial Advisor is not a grammar or style checker. In fact, it has absolutely no interactive functionality at all. It is strictly for searching and reading — just like a book. Which means that if you need advice on whether you should use a singular or plural verb in a particular sentence, you have to leave your document, launch HyperCard, search the stack, find the reference, understand it, and then return to your document and make the appropriate change. The process isn't much more convenient than picking up a book.

The package runs under HyperCard 2.0 and takes up more than 2 megabytes of hard-disk space once you've installed it. The presentation is spartan — no sound or animation to liven things up, and the publisher's choice of fonts doesn't help much either. Examples are shown in an italic type that's nearly illegible, and the examples themselves are often unclear.

Serious users can compile their own word and style lists, as well as a copy editor's style guide, and the package can be linked to a custom stack.

Editorial Advisor's advice is generally sound, but since the discussions are limited to single cards with no scrolling fields (a good idea in a stack), there isn't much depth to the explanations. Also, although the information is culled from a wide variety of sources, there are no citations as to which guide recommended what, which leaves the anxious writer wondering how widely accepted the advice really is.

Editorial Advisor simply doesn't have the substance or authority of tomes such as *The Chicago Manual of Style* — or even Strunk and White's *The Elements of Style*. If Petroglyph's package had on-line abilities, it might be valuable, but it lists for \$50 more than Correct Grammar and does much less. Editorial Advisor asks you to swap 2 inches of your desk space for 2 megabytes of storage. It isn't a fair trade.

Petroglyph, 123 Townsend Street, Suite 345, San Francisco, CA 94107; (415) 979-0588. Version 1.0. \$149.95.

— Russell Ito



# Survival of the fittest.

Which color scanner is the natural selection?



**Microtek Scan** Original: 8 x 10 B&W print  
Brightness level: n/a Input resolution: 150 dpi  
File Size: 486K Output Resolution: 300 dpi  
Line Screen: 133 lpi Gamma Correction: None

When it comes to selecting the right scanner, be forewarned. It's a jungle out there. You may not get the quality you were promised.

The La Cie Silverscanner has evolved beyond all that. Just look at this comparison between the Microtek 300ZS and the La Cie Silverscanner. Each image was scanned at standard settings with no corrections. This ad was then created and separated using Adobe Photoshop, QuarkXPress and a Linotronic 330.

As you can see, Silverscanner is a more advanced species of scanner which adapts better to a changing environment.

Silverscanner provides superior color, gray scale and line art over any other similar species of scanner. And as a bonus, Adobe Photoshop Limited Edition, Aldus PrePrint, Silverscan plug-in and Silverlining are included FREE with every Silverscanner purchase.

Silverscanner. More evolved. More advanced. More value. Natural selection at its finest.



**LaCie Scan** Original: 8 x 10 B&W print  
Brightness level: 2 Input resolution: 150 dpi  
File Size: 484K Output Resolution: 300 dpi  
Line Screen: 133 lpi Gamma Correction: None



**Microtek Scan** Original: 8 x 10 color print  
Brightness level: n/a Input resolution: 150 dpi  
File Size: 1,506K Output Resolution: 300 dpi  
Line Screen: 158 lpi Color Correction: None



**LaCie Scan** Original: 8 x 10 color print  
Brightness level: 2 Input resolution: 150 dpi  
File Size: 1,502K Output Resolution: 300 dpi  
Line Screen: 158 lpi Color Correction: None



**La Cie Silverscanner:** 16 million beautiful colors, 256 smooth shades of gray, incredible line art, up to 600 dpi all in a single pass.

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**"worked flawlessly"** "Just a quick note to let you know how sturdy your hard drives are. I am a Navy A-6 pilot. Just thought you'd like to know that your drive logged about 5 hours of flight time and 5 carrier landings and has worked flawlessly since. Not bad eh?"

*Lt. Carl Oesterle, Navy A-6 pilot*

"La Cie drives are the most reliable and convenient disks I've ever had." *James J Haf, Lansing, MI*

"The best survival history of any drive purchased... quietest and most portable." *Al Forster, Dow Chemical*

**"performance champ"** "Of all the high-capacity drives, the price performance champ is the very affordable La Cie."  *MacUser, Dec. 1990*

Designer's Choice Award - *Industrial Design Review*  
Bronze Award - *America's Industrial Design Excellence*

**"support was exceptionally good"** "I now know why my friends suggested I buy La Cie, their backup and support was exceptionally good. Not only did La Cie provide intelligent articulate instruction and advice but they even called back to learn of my progress." *Richard Woudenberg, Ridgewood, NJ*

"Perhaps you can take satisfaction in knowing that your dedicated users are appreciative of the quality you put into your product and the service with which you back it up." *Dr. David J. Hibler, Lincoln NB*

**"service star"** "Service star La Cie has toll free support and guaranteed turnaround time for repairs. La Cie comes out on top in service and support." *Macworld, June 1990*

La Cie has fixed drives from 40 MBs to 1.2 GBs, 44 MB removable and 600 MB magneto optical drives.

40 MB hard drives  
as low as

**\$399**



**Free shipping, free toll free support, free Silverlining, free Norton Utilities, free Silverplatter and free 2 Plus year limited warranty!** equals a \$750 bonus with the purchase of a La Cie hard disk drive.

Tsunami actual size including universal power supply, silent fan and external termination switch.



# drive."

David Kennedy  
Langley, B.C. Canada

**"fast, quiet, small and light"** "I love your Tsunami drive! It's fast, quiet, small and light and I can't emphasize how wonderful it is to turn the termination on and off. Of course, it doesn't hurt that you bundle Silverlining with it—the universal formatter with no competition that I know."

Johnathan Braun, Palo Alto, CA

"La Cie offers the leading combination of software and performance." *Macworld*, March 1990

MacUser Labs show that La Cie drives best in raw speed, real-world performance, temperature and noise tests. *MacUser*, February 1990

**"performed beautifully"** "My productivity has increased at least three-fold. My La Cie drive has performed beautifully. It is really fast, quiet and the documentation is very clear. When I had a question and called, I got a friendly, helpful person who really took the time to explain what I needed to know. This sounds like a testimonial. Yep, I guess it is." Craig Turner, Chapel Hill, NC

"I love these drives. The size is perfect, the response time is great, these are the best drives money can buy. I have searched and compared price, quality and performance with other products. La Cie is the best." Edwin E. Rivera-Juan, Hato-rey, PR

**"king of consumer choice"** "If you are value conscious you'll be hard pressed to beat La Cie." *Macworld*, November 1990

"La Cie's longer warranties truly represent a good deal. The king of consumer choice." *Macworld* September 1990

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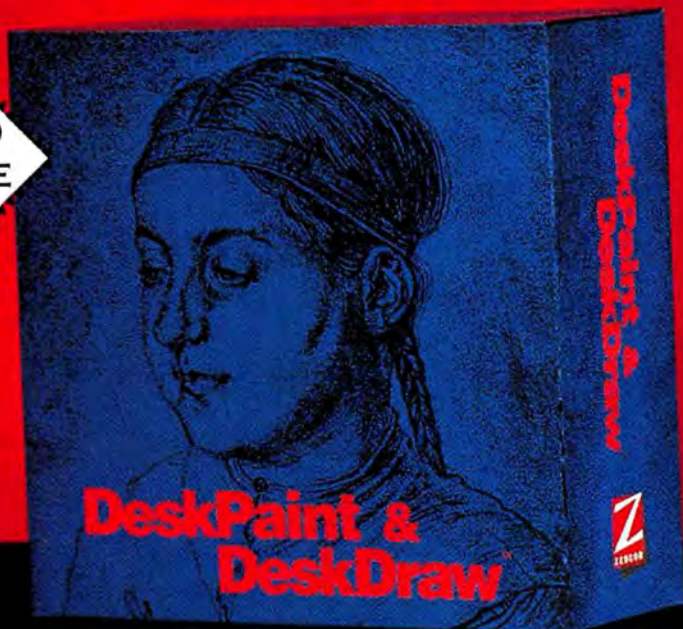
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# Best Graphics Program



## Not bad for a DA!

We always knew our convenient desk accessories were as powerful as applications. Now we'd like to thank the Editors at MacUser for letting you know.

We're also flattered that the two other nominees for "Best Graphics Program": Adobe Illustrator™ 3.0 and Studio 32™, cost three times as much as DeskPaint® & DeskDraw®.

DeskPaint is a 98K DA that works as well with black & white images on a Macintosh Plus or Classic as it does with color images on a IIsi or IIfx (even in 24-bit color). It reads and writes PICT, TIFF, and MacPaint® files. It does smooth-

ing, auto-trace, graduated fills, multiple windows, and a lot more.

DeskDraw® is a DA comparable to MacDraw®. Some of its features include hairlines, rotated text and arrows. It reads and writes PICT

files compatible with SuperPaint™, MacDraw II, and Canvas™.

Best-of-all DeskPaint & DeskDraw work on top of your favorite programs including; PageMaker™, Xpress™, WriteNow™, MacWrite®, Word™, and FileMaker™.

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DeskPaint & DeskDraw are also available in DESK™, a set seven integrated desk accessories:

**DeskWrite™:** Word processor with 95,000 word spell check. Wraps text around graphics.

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**DeskSecretary™:** Never forget another appointment.



**DeskCalc™:** Spreadsheet and charting.

**DeskFile™:** Database for text or graphics.

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# MacUser

## THE 6TH ANNUAL EDITORS' CHOICE AWARDS

Every year, the editors of *MacUser* evaluate hundreds of Macintosh products. Some products are great and some of them aren't, but by the end of 12 months, we have a pretty good idea of which ones are the real standouts. We also get a feel for new trends. 1990, for example, was a year of great beginnings in areas such as 24-bit color, cross-platform connectivity, virtual reality, 3-D modeling, and video. The '90s should be an exciting decade indeed. 1990 was also a year in which high-volume low-end products finally had their day, with Apple setting the pace by releasing its new accessibly priced CPUs.

Now it's time to reward the best of the bunch. The Eddy Awards are not a popularity contest. We put in countless hours debating the relative merits of all the products released during 1990 — and after hours of discussions, arguments, and lobbying — we finally narrowed the field in each category to three nominees. A secret ballot determined the winners.

On the human side, the John J. Anderson Distinguished Achievement Award and the Derek Van Alstyne Rising Star Award recognize the excellence of the people behind Mac products. They also recognize the excellence of the two *MacUser* staff members who died during the California earthquake of 1989 and whose example showed that it's often the people behind a product that really make it special.

And now, the envelopes, please . . .

BY THE EDITORS OF  
**MacUser**



## EDITORS' CHOICE AWARDS



### BEST DATA-MANAGEMENT PRODUCT

#### CLEARACCESS

1990 saw few new releases or upgrades in the traditional database- and spreadsheet-program categories; consequently, we've extended this category to include data-management tools that go beyond the traditional ones. This year's Eddy goes to ClearAccess 1.21, from Fairfield Software. This DA provides access to minicomputer and mainframe databases, which is a boon for companies whose databases reside on mainframes. ClearAccess uses Apple's DAL (Data Access Language) and Oracle's SQL\*Net to provide a consistent user interface, regardless of the type of database program or host. Its advanced scripting features automate connection to the host as well as the opening and querying of database files.

#### HONORABLE MENTIONS

**Full Impact 2.0** from Ashton-Tate is a spreadsheet program well suited to creating charts, graphs, and presentations. This new version offers functions rivaling Microsoft Excel's and can directly import and export Excel files. Claris' **FileMaker Pro 1.0** deserves to be called "mainstream"—not the fastest database program and not relational but easily the most powerful data manager for

average users. The new version includes buttons and better work-group operation over networks.

### BEST DATA RESOURCE

#### ACCENTS & BORDERS

3G Graphics has a well-earned reputation for producing high-quality EPS artwork, and its latest offering, **Accents & Borders**, is no exception. The numerous borders, ornaments, labels, and symbols in this finely crafted collection are crisp black-and-white graphics; a bonus disk offers marvelous color images. Unlike most clip-art offerings, all 3G images are opaque and most are strategically subgrouped for easy separation into more images or quick color changes. Like the other packages in 3G Graphics' Images with Impact! series, **Accents & Borders** is simply superb.

#### HONORABLE MENTIONS

Packaged data comes in other flavors besides clip art. Not yet available on IBM PCs, **Lotus Marketplace: Business** is a database application on a CD-ROM disc containing seven million business addresses (updated quarterly). You can use this data for research or to export mailing lists for less than you'd pay a list broker. **MIDI Records** and **MIDI Hits** from Passport Designs' Music Data division let you choose



from more than 500 professionally recorded songs in a variety of styles. MIDI Records lets you mix and match the tunes of your choice; MIDI Hits presents three popular songs on a disk.

### BEST FINANCIAL- MANAGEMENT PACKAGE WEALTHBUILDER BY MONEY MAGAZINE

**WealthBuilder by Money Magazine 1.0**, from Reality Technologies, can help you plan for the future, whether it's retirement, college education, or a big vacation. You create "what if?" scenarios based on different economic and personal assumptions, and **WealthBuilder** tells you how much you need to save. It can also suggest what portion of your savings should be in stocks, bonds, or pork bellies. A database of stocks and mutual funds contains information on ratings and performance for the past ten years; the information is updated quarterly.

#### HONORABLE MENTIONS

**Accountant, Inc. 2.0**, from Softsync/BLOC, is the most complete integrated accounting and financial-management package for the Mac. With its task-oriented presentation, you can make full use of this program without having to know much about accounting. Teleware's **M.Y.O.B. 2.0**

offers an integrated accounting system at an incredibly low price. Version 2.0 adds flexibility to everything from checks to reports.

### BEST COMMUNICATIONS PRODUCT

#### TELEPORT A300

On the surface, the **TelePort A300**, from Global Village Communication, is just another 2,400-bps modem, but it offers easy-to-use software, an attractive price, Hayes compatibility, and some ingenious engineering. Instead of using one of your Mac's serial ports, the **TelePort A300** connects to the ADB (Apple Desktop Bus)—which also links the keyboard and the mouse to the Mac. The **TelePort** requires no separate power supply and offers MNP data compression and error correction. Its software creates helpful blinking "status lights" in the Finder's menu bar.

#### HONORABLE MENTIONS

Alisa Systems' **AlisaMail 1.0** fully integrates Microsoft Mail and DEC's VMS Mail on DEC VAX minicomputers. Gateways are available to DEC's All-in-1, IBM PROFS, and X.400 services. Alisa Systems plans a 1991 release that will work with CE Software's QuickMail. Prometheus Products' **ProModem 9600M Plus** operates as a V.32 9,600-bps data modem





and a 9,600-bps send/receive fax modem. The ProModem also has V.42 error correction and V.42bis/MNP 5 data compression.

#### BEST PAGE-DESIGN PROGRAM

##### **PUBLISH IT! EASY**

**Publish It! Easy 2.0** packs an incredible amount of power into one economical package. Its combination of word-processing, graphics, and page-layout capabilities works — speedily — on any Mac (no hard-disk drive required). **Publish It! Easy** offers more basic features than **PageMaker 4.0** — for example, vertical justification and incremental rotation of text and graphics — plus innovative features such as an interactive command palette; a service-bureau checklist; and the **Slideshow**, which may eliminate your need for a separate presentation package. This **Timeworks** offering is an unbeatable choice for owners of low-end Macs and anyone else who doesn't need high-end color features — or the price tags that come with them.

#### HONORABLE MENTIONS

**QuarkXPress 3.0**, from Quark, has become the program of choice for high-end color publishing — it was also nominated for best color-prepress product. Version 3.0 is a full overhaul of an

already excellent program, with a much-improved interface. **FrameMaker 2.1 for the Macintosh** has filled a void in Mac page-layout/long-document production. Frame has successfully made a cross-platform product with a good Mac interface.

#### BEST TYPOGRAPHIC PROGRAM

##### **TYPESTYLER**

Brøderbund's **TypeStyler 1.5** is an excellent type-manipulation program at a great price. It lets you quickly and easily create sophisticated display type. Several features, such as graduated blends, are unavailable in more-sophisticated, more-expensive packages. Version 1.5 adds enhancements such as the ability to convert any straight line within an object into a Bezier curve, the ability to specify object rotation by degrees, and the ability to designate the specific point size of text.

#### HONORABLE MENTIONS

**FontStudio 1.0**, from Letraset, is the first fully integrated package for creating PostScript typefaces. **FontStudio** includes bit-map and kerning editors, and it can create editable outlines. **Fontographer**, from Altsys, has long been the standard for typeface creation. Version 3.1 adds automatic hinting and — best of

#### JOHN J. ANDERSON DISTINGUISHED ACHIEVEMENT AWARD **BILL ATKINSON**

The first graphics application for the Mac was a goofy black-and-white pixel thrasher called **MacPaint**, which was developed by a soft-spoken Apple employee named Bill Atkinson. When people raved about how easy the Mac was to use and others dismissed the mouse-driven "toy computer" as unfit for serious work, **MacPaint** seemed to represent everything that was brilliant, intuitive, and yet woefully inadequate about the Mac.

Now the Mac family can boast not only color 3-D animated-graphics software but also an overwhelming variety of powerful business programs — most of which derive from the elegant, friendly interface of **MacPaint**.

When Apple released **HyperCard**, Atkinson's amazing software erector set, in 1987, Mac owners found themselves not merely reading about but also using a revolutionary advance in personal computing. Atkinson (now one of the founding forces behind an Apple spin-off called **General Magic**) would be the first to credit his many friends for their contributions to the Mac's success. He deserves this year's John J. Anderson Distinguished Achievement Award because his own gift to the Mac community is so pervasive: He has shown that a complex, incredibly powerful computer can be simple — and even fun — to use.







all — lets you create Type 1 fonts that are compatible with ATM.

**BEST PRESENTATION  
PRODUCT  
MORE**

For those who are organizationally inclined, outliners are pretty handy. Even more useful is Symantec's **MORE 3.0**, which is the best presentation-software package around as well as one of the premier outliners. Information from the outline mode forms the basis of presentations. The presentation mode, with its many templates, makes it extremely easy to create effective presentations quickly.

**HONORABLE MENTIONS**

**PosterWorks 2.0**, from S. H. Pierce, creates full-color PostScript posters that measure up to 100 square feet. The big secret: PosterWorks is really an economical high-end-color program with sophisticated controls over calibration, color correction, and four-color separations. Visual Business Systems' **Visual Business GraphMaster** lets you easily add imaginative black-and-white or color charts and graphs to your presentations. Along with the standard chart and graph types, Visual Business GraphMaster lets you use pictograms in place of bars within a chart.

**BEST GRAPHICS PROGRAM  
STUDIO/32**

Electronic Arts' **Studio/32 1.0** is a powerful painting program that supports 32-bit full color, giving computer artists virtually unlimited colors and tools to work with. Even better than its power is its unimposing interface, which lets the artist in you focus on creating rather than on computing. Studio/32 brings some innovations to the painting environment, such as the ability to keep text as a separate layer for editing.

**HONORABLE MENTIONS**

**DeskPaint 3.03**, from Zedcor, packs a lot of power into a DA. Not only is it 32-bit full color, but it can also convert from one pixel depth to another, auto-trace black-and-white bit maps, and create graduated fills. With the addition of a slew of new features, including better charting tools and text handling, **Illustrator 3.0**, from Adobe, is still one of the best drawing programs available.

**BEST COLOR PREPRESS  
COLORSTUDIO**

Of all the new photo-retouching software available for the Mac, **ColorStudio 1.1**, from Letraset, gives skilled digital artists the most creative power. ColorStudio has become the acknowledged leader for merging high-resolution color

DEREK VAN ALSTYNE

RISING STAR AWARD

**RAND K. AND ROBYN  
MILLER**

In astronomy, a spinning, tightly linked pair of stars is called a binary star, and long ago, their twinkling light was thought to illuminate the future. The winners of this year's Derek Van Alstyne Rising Star Award are two brothers who've used the Mac's intangible binary language to create inspiring works of art. Their technical command of HyperCard, along with a flair for captivating black-and-white graphics, has produced two immensely popular "children's books": **The Manhole** and **Cosmic Osmo** (distributed by Activision).

"Children's books" may be something of a misnomer, however; these aren't traditional books, and they certainly aren't just for kids. These HyperCard stacks show a complete understanding of HyperTalk scripting, interface design, sound effects, and animation. The central achievement of the Miller brothers, however, has been to demonstrate that even new Mac users can learn the magic of HyperCard. Starting with the same program (developed by Bill Atkinson and friends at Apple) that's available to all Mac owners, Rand and Robyn have created new worlds that fascinate adults and children alike.



Robyn (left) and Rand Miller





photos, video captures, pixel artwork, and PostScript type. Painting and selection tools can be customized for photo-retouching, masking, and special effects, and the program allows for precise calibration of its own color balance, as well as that of other applications. The Shapes Annex for ColorStudio offers enhanced control by creating a PostScript drawing layer that can transfer its own or imported PostScript objects into the painting layer.

#### HONORABLE MENTIONS

Barneyscan's **CIS-4520** multifunction production scanner is the ultimate prepress tool. It scans transparencies in a range of sizes at high resolution, and its software provides complete control over color correction, masking, and tonal compression. **QuarkXPress 3.0** — nominated too for best page-design program — is a superb page-layout and typographic tool, but it also provides sophisticated color separation of text and PostScript graphics. Although it can't yet separate color TIFF images by itself, it offers high-resolution Scitex output through its Visionary link.

#### BEST CAD SOFTWARE **MINICAD+**

This category's Eddy goes to **MiniCad+ 3.0**, from Graphsoft,

a product that integrates a spreadsheet and a relational database into a drawing so you can keep track of costs as the design evolves. Database information linked to a particular object stays with that object even when it is cut and pasted into another drawing. MiniCad+ also has a built-in programming language and a "smart cursor" to aid in the finer points of drafting.

#### HONORABLE MENTIONS

The solid **Claris CAD 2.0** also offers an intelligent cursor in addition to new and enhanced drawing tools and a new help system. It contains one of the best CAD interfaces on the market. **PowerDraw 3.0**, from Engineered Software, features an innovative interface, a macro language, and advanced features for dimensioning and creating isometric drawings.

#### BEST 3-D MODELING/ RENDERING PACKAGE **DYNAPERSPECTIVE**

This year's best program for presenting 3-D models is the versatile **DynaPerspective 2.0**, from Dynaware. It does true 3-D modeling, rendering that includes translucent surfaces, and animation. It also imports and exports files in a variety of formats. Some of the new features include



drafting layers, 24-bit color, anti-aliasing, and faster fly-through animations. Elevations and easily manipulated perspective views are automatically generated from the floor-plan model, and animations can be created and played back with just a few mouse clicks.

#### HONORABLE MENTIONS

Kudos also go to two products that are famous for their high-quality rendering capabilities. Pixar's **MacRenderMan 1.0** is the Mac version of the industry-standard high-end workstation rendering program that results in photographic-quality images. **StrataVision 3d 1.4** from Strata, which also does modeling, is less high-end than MacRenderMan but is still a standard on the Mac. MacRenderMan files can be created with StrataVision 3d and then edited as text files.

#### BEST ANIMATION PROGRAM **FILMMAKER**

Broadcast-quality video production and editing on the Mac has become an international enterprise. The French animation package **FilmMaker 1.0**, created by Paris-based Encore Development and then acquired by Paracomp, can import PICS, PICT, and EPS files. Objects that are created in Paracomp's Swivel 3D, Swivel 3D Professional, and

ModelShop can be also imported and animated. The four FilmMaker modules (Animate, Color, Sound, and Present) render objects in 8- or 32-bit color with anti-aliasing, transparency, dithering, and color remapping. Animations are created with editable Bezier curves that build smooth paths along which objects can be scaled and rotated.

#### HONORABLE MENTIONS

**The Animation Stand 1.2**, from Linker Systems, may lack some of the flashy features of 3-D animation/modeling programs, but this industrial-strength program already meets the needs of Hollywood's Mac-literate cartoonists. If you need to produce effective animated presentations on a tight budget, check out **interFACE 1.0**, from Bright Star Technology, which uses digitized sound and black-and-white or color photos to create synchronized "talking heads."

#### BEST MULTIMEDIA SOFTWARE **AUTHORWARE PROFESSIONAL FOR MACINTOSH**

Most multimedia authoring tools require sophisticated scripting — especially if you want to develop highly interactive, professional-quality applications.



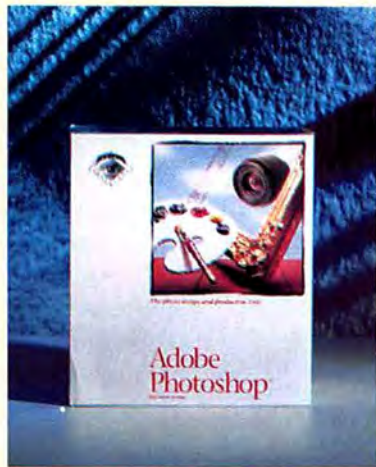
SOFTWARE PRODUCT OF THE YEAR

PHOTOSHOP

It's no exaggeration to say that any new software application from Adobe Systems is more than likely, in the words of Guy Kawasaki, to be "deep, indulgent, complete, and elegant." All these adjectives — and many more superlatives — apply to this year's software product of the year, **Photoshop 1.07**.

With Photoshop, Adobe has recognized and effectively built on the work of others. In this case, the older photo-editing program is Barneyscan XP, which was offered with Barney's popular slide scanners. Adobe used it as the basis for Photoshop and also added a variety of sophisticated image-manipulation tools, including text and support for EPS graphics. Text quality is optimized by Adobe Type Manager, and the company has provided control over image transparency as well as support for the RGB, indexed, CMYK, HSL, and HSB color models. The Photoshop program lets you import and export EPS, TIFF, PICT, Amiga, GIF, MacPaint, PIXAR, PixelPaint, Scitex CT, TGA, and ThunderScan files.

Photoshop is the kind of product that's destined to become a Macintosh staple. Even our hard-headed reviewer (see review, July '90, page 53) claimed that "although Photoshop is not a complete substitute for a high-end dedicated system, it makes powerful photo editing accessible, painless, and easy."



**Authorware Professional for Macintosh 1.6**, from Authorware, stands out by providing an icon-based, object-oriented authoring environment in which you can create, deliver, and maintain interactive multimedia applications without scripting. Version 1.6 adds support for 24-bit color and 32-bit QuickDraw, more efficient running of PICS Movies, support for the enhanced sound capability on newer Macs, icon-content pre-viewing, and more.

HONORABLE MENTIONS

Multimedia on the Mac wouldn't be where it is today if it weren't for MacroMind's **MacroMind Director**. Version 2.0 has added interactivity, the ability to control external video and audio devices, and 24-bit-color support. Farallon's **MediaTracks 1.0** is the electronic equivalent of a VCR for the Mac, but unlike it, this powerful package lets you edit tapes with the ease of cutting and pasting. It features interactive buttons, HyperCard links, and synced MacRecorder tracks.

BEST DESKTOP-VIDEO PRODUCT

**RASTEROPS VIDEO COLORBOARD 364**

RasterOps leads the way in Mac desktop video with the **RasterOps**

**Video ColorBoard 364**. This board provides full 24-bit-color display and live video in a single affordable package. With software that does everything from controlling the display colors and flipping video images to capturing video frames, RasterOps has created the product for putting television onto your Mac.

HONORABLE MENTIONS

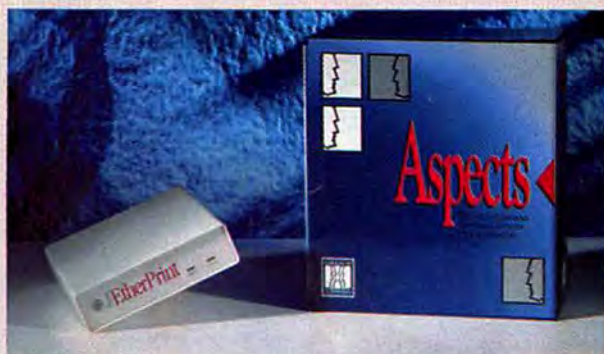
**RadiusTV**, by Radius, which wins our Hardware Product of the Year award, smoothly integrates live high-resolution color TV into the Mac environment. It also offers a package of special-effects software. **PC-VCR**, from NEC, is a frame-accurate, Mac-controllable videocassette recorder. It allows random access of individual video frames for recording or playback, and it has a separate dubbable time-code track.

BEST CONNECTIVITY SOFTWARE

**TIMBUKTU**

Farallon pioneered the sharing of Mac screens across networks. With **Timbuktu 3.1** it adds the ability to connect to multiple Macintoshes and view each screen as a separate window that doesn't take over the local Mac's entire screen. Another welcome addition is that Timbuktu lets you transfer files over a network.





#### HONORABLE MENTIONS

**Status-Mac 1.0**, from Pharos Technologies, can do a complete inventory of all software, peripherals, and even plug-in boards on networked Macintoshes, but it deftly avoids the Big Brother syndrome by requiring user permission. Dantz Development's **Retrospect Remote 1.2** has the functionality of its Retrospect software (including the unfortunately Byzantine user interface) but adds the ability to back up other users' hard-disk drives over a network.

#### BEST CONNECTIVITY HARDWARE ETHERPRINT

In the realm of connectivity hardware, this year's Eddy goes to Dayna's **EtherPrint**, a simple and elegant solution to the problem of accessing LocalTalk-based printers from within Ethernet. EtherPrint makes a printer connected to its LocalTalk port appear on Ethernet, so you don't need to buy a router just to make printers reachable from Ethernet.

#### HONORABLE MENTIONS

Shiva's **NetModem V.32** lets you add the current high-speed telecommunications standard to the range of modems accessible via LocalTalk. The versatile **LanWay TR16/4**, from Tri-Data

Systems, is the first 16-megabit-per-second token-ring board for the Mac. In addition, a simple software switch makes it compatible with the more common 4-megabit token-ring LANs.

#### BEST WORK-GROUP PRODUCT ASPECTS

Work-group products are still new to the Macintosh. As a result we have only two nominees in the category. Eddy-winner **Aspects 1.0**, from Group Technologies, is perhaps the first true work-group application for the Mac. It is unique in that it allows several users who are connected on an AppleTalk network to work simultaneously on the same painting, drawing, or text document. No file server is required to work this magic: Each computer maintains a complete local copy of all the open documents in RAM. If one user exits from a "conference," the other users can keep working. And Aspects is fast — even over the Macintosh's built-in LocalTalk network. Changes made by one user are reflected on other users' screens almost immediately. With Aspects, Group Technologies has developed a significant new technology that should proliferate in the near future.



#### HONORABLE MENTION

**DataClub 1.1**, which International Business Software calls a "virtual server," allows users on an AppleTalk network to share their local folders or hard disks as if they were part of one large network file server. All the participating users see the same view of the server's file structure, regardless of where the files are located physically — and even if the files are moved between Macs.

#### BEST EXECUTIVE- INFORMATION-SYSTEMS PRODUCT TACTICIAN

The nominees in this category might make you think that geographic-database programs are the only type of EIS product for the Mac. That's not so, but this year's hottest EIS products all happened to be geographic-database programs, with three new products released and two existing products substantially upgraded (see "Putting Your Business on the Map," in this issue). **Tactician 1.0**, from Tactics International, is by far the most sophisticated of the desktop-mapping packages. Its DAL interface for mainframe data, 3-D spreadsheet program, and street-level mapping make this the package of choice for marketing and retail-sales management.

#### HONORABLE MENTIONS

Two other desktop mapping products deserve mention. **Descartes 1.0**, from Intermap, offers a built-in, easy-to-use icon-based database program and simple mapping and reporting tools. GeoQuery's **GeoQuery 2.0** is a database front end that offers a lot of performance — sophisticated pin mapping and data aggregation, a mainframe interface, and the ability to run on even the least powerful Mac — for a very reasonable price.

#### BEST DATA-ACQUISITION/ ANALYSIS PRODUCT LABVIEW

**LabVIEW 2.1**, from National Instruments, exceeded our expectations in interface innovation and power. Engineers and scientists who aren't programmers can use LabVIEW for data acquisition and analysis as well as for instrument control. Users draw a block diagram to program on-screen "virtual instruments" that look and act like lab equipment. The program comes with hundreds of virtual instruments that you can use as is or in your own designs. This is the kind of program that sells Macs.

#### HONORABLE MENTIONS

**SPSS for the Macintosh 4.0**, from SPSS, and **SYSTAT for the Macintosh 5.0**, from SYSTAT,



## EDITORS' CHOICE AWARDS



don't offer LabVIEW's elegant interface, but both are sophisticated data-analysis programs that offer complex statistical procedures such as time-series analysis. Both also offer extra modules for additional procedures. SPSS offers more options and high-end analysis, but its modules are more expensive than SYSTAT's.

### BEST DEVELOPMENT TOOL **THINK PASCAL**

Developing software for the Mac is difficult enough — any tool that makes it easier is priceless. **THINK Pascal 3.0**, from Symantec, has the most advanced and comfortable development environment on the Mac. It supports Apple's MacApp class library and also contains its own object library. Although C is the language of choice for most developers, THINK Pascal is the benchmark for today's development environments.

#### HONORABLE MENTIONS

Until recently, ResEdit was the only graphical resource editor available for the Macintosh. Mathemaesthetics' **Resorcerer 1.0** is an excellent alternative, offering many new resource-editing features. Apple's **MacApp 2.0** object library is a framework for Mac applications that reduces development time and effort,

once you've made it over the learning curve.

### BEST UTILITY **THE NORTON UTILITIES FOR THE MACINTOSH**

The Norton Utilities for the Macintosh 1.0, from Symantec, has redefined the state of the art of data-recovery software. True to the reputation of its namesake in the PC world, the Mac product is an excellent collection of tools that speed up disk-related work with an optimizer and a standard-file-dialog-box extender with high-speed file-finding capability. It can resurrect data from sick disks with its intelligent recovery tools.

#### HONORABLE MENTIONS

**HandOff II**, from HandOff, provides application-substitution as well as application-launching capabilities that are similar to OnCue's. You can assign a screen depth to each application — for example, you can automatically run a text editor in 1-bit mode if scrolling speed, not color, is important. Cheshire, from Abbott Systems, lets users of popular programs such as Word and Page-Maker add a choice of 21 basic bar, column, line, or surface charts to their documents with just a few keystrokes. Its beauty lies in its



extensibility, however. Cheshire should soon let users add greater functionality to their applications.

### BEST COMPRESSION PRODUCT **COMPACTOR**

One of this year's hottest product categories is compression, with a slew of new products and upgrades as well as exciting developments in the technology. **Compactor 1.21** eclipsed all of the compression contenders this year on three fronts — strength, price, and compatibility. Although some products compress faster, no program compresses more than Compactor. If that isn't enough, consider the price — \$25 in shareware fees. Compactor has a special mode that lets you compress files in a self-extracting archive, which means that the person you send the file to doesn't need Compactor to decompress it. That's the sort of ease of use that makes the Mac an elegant computer to work with. Kudos to programmer Bill Goodman.

#### HONORABLE MENTIONS

**PicturePress 1.03**, from Storm Technology, is the best JPEG-color-compression product on the market. It allows extremely flexible compression with and without hardware acceleration. Salient Software's **DiskDoubler**

**3.0** has carved a niche for itself in an already crowded compression market by being the most straightforward way of saving space on your hard disk. DiskDoubler's compression and decompression are extremely fast, and this new version is even easier to use than previous releases.

### BEST MUSIC PRODUCT **DECK**

**Deck** is a completely software-generated recording system for the Mac that brings final recording, mixing, and mastering into the home studio. It's also a lot of fun to use. Created and manufactured by OSC and marketed by Digidesign, Deck lets you create numerous effects, and it has the unique ability to layer tracks onto themselves as well as onto other tracks. You can connect Deck to other MIDI applications and hardware via the PatchBay DA. Deck lets you create custom studio CDs for a fraction of the price you would otherwise pay.

#### HONORABLE MENTIONS

**MacProteus**, from Digidesign, lets you turn your Mac II into a true digital music workstation without taking up a lot of space. Based on the Proteus 16-bit digital-sound module by E-mu Systems and including control software from Opcode Systems, this



HARDWARE PRODUCT OF THE YEAR

**RADIUSTV**

The boundaries that separate the various electronic media are disappearing—personal computers will soon be able to access everything from user-programmable cable TV to broadband fiber-optic telephone networks. With **RadiusTV**, from Radius, Mac users have taken a giant step toward the electronic future. RadiusTV is a NuBus-board/external-box combination that represents a complete integration of computers and television including tuning, audio, video, closed-captioning, teletext, and calibration.

The versatile RadiusTV board can be installed in any member of the Mac II family except the IIsi. It displays live 30-frame-per-second video images in a resizable window, and it can use multiple video input from cable or broadcast TV, VCRs, camcorders, and laserdisc players. RadiusTV includes a DA (to activate TV or other input while other applications are running) and Theatrics, a video special-effects program.

RadiusTV is the first video device that scans the entire video signal—in other words, it digitizes both the video and the audio tracks. Its ability to record closed captions holds lots of promise—you can, for example, build text files of broadcasts by stripping out the captions. This information can be used to do keyword searches that tell a VCR to start recording whenever a keyword—such as *Beirut*—is spoken in a broadcast.



NuBus card contains more than 192 digital-instrument recordings. It allows you to play sounds via any MIDI controller or MIDI Manager-compatible music program. **Encore**, from Passport Designs, is an easy-to-use music-composing and -printing program that lets you compose with standard music notation and MIDI. Encore lets you enter music in five ways, it imports and exports to most other programs, and it handles up to 64 tracks of MIDI data with four voices per staff.

**BEST EDUCATION PROGRAM**  
**DISCIS BOOKS**

**Discis Books** are a wonderful blend of high technology and tradition that make the most of the Mac. This series of interactive children's books from Discis Knowledge Research uses CD-ROM technology to help children read. Books by children's authors such as Robert Munsch and Beatrix Potter come to life as the child "turns" pages of text illustrated with original pictures and enhanced with sound effects and music. Double-clicking on a word or picture gives the pronunciation and, in some of the books, a second-language translation.

**HONORABLE MENTIONS**

**The String Quartet**, Warner New Media's second Audio Notes

program, tackles Beethoven's String Quartet No. 14, Op. 131, masterfully. This CD-ROM release that includes HyperCard annotations is an appealing way to appreciate—as well as study—the music. Scholastic—better known in educational circles for its great children's and young adults' books—has broken into educational software with **Point of View**. This interactive multimedia program provides an overview of U.S. history and lets students create projects by using their own research in conjunction with the impressive data that's provided. A dull interface is its only drawback.

**BEST RECREATIONAL PROGRAM**  
**THE COSMIC OSMO CD-ROM**

When the popular HyperCard collection Cosmic Osmo was first introduced, this enchanting interactive odyssey already consumed a hefty 4 megabytes. Now the **Cosmic Osmo CD-ROM**, from Activision, expands the incredible Osmoland environment to a whopping 100 megabytes—all contained on a shiny CD-ROM disc. This new version of Cosmic Osmo provides an even more elaborate and entertaining variety of sounds and music plus clever





animations, puzzles, and delightful characters.

#### HONORABLE MENTIONS

Probably the ultimate in addictive pastimes is **Welltris**, the 3-D sequel to Tetris, Spectrum HoloByte's Soviet import. Welltris requires you to position falling objects on a grid to form lines and fill up the available space. Blurring the line between entertainment and education is **The Playroom 1.1**, from Brøderbund Software. This program — aimed at three-to-six-year-olds — teaches basic skills such as reading, counting, and spelling by taking the child through a magical playroom that's both fun and educational.

#### BEST INPUT DEVICE

##### VOICE NAVIGATOR II

We considered Articulate Systems' Voice Navigator promising last year (and rewarded that promise with the Most Significant Hardware Product Eddy). The product has matured into **Voice Navigator II**, which now has a sensitive unidirectional microphone that replaces the awkward headphones of the previous version. The microphone provides far greater clarity and precision than does the omnidirectional microphone of Farallon's Voice Recorder and Apple's Mac LC and IIsi. Voice Navigator II has

versatile, powerful software, including Voice Waves and Voice Waves/Plus. These modules provide a built-in, predefined macro capability that lets you instantly train Voice Navigator II to perform complex tasks in response to one spoken command.

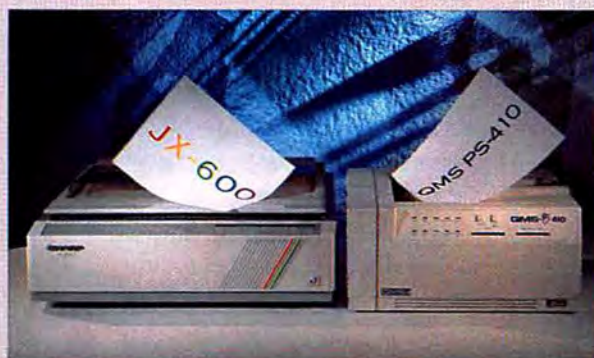
#### HONORABLE MENTIONS

The MicroSpeed MacTRAC's smooth curves make for a superior trackball that looks as good as it feels. Its large ball and 200-dpi resolution support fast, accurate pointing. The drag-lock feature makes those pull-down menus stay put. DataDesk International's **Switchboard** is a customizable modular keyboard that works on all platforms. You can rearrange its components so that it works best for you. Optional function keys and modules (such as a trackball) are available.

#### BEST DISPLAY PRODUCT

##### L-View MULTI-MODE

The **L-View Multi-Mode**, from Sigma Designs, provides the ultimate monochrome monitor for demos, publishing, spreadsheets, CAD, and programming. Its selection of dpi modes offers resolutions spanning from 512 x 384 pixels all the way up to 1,664 x 1,200 pixels. The **L-View cdev** comes with many useful



utilities, including screen capture, pop-up menus, a large cursor, a screen saver, hot keys, and a large menu bar. OCLI glare protection is available for an additional \$200.

#### HONORABLE MENTIONS

The **Radius Pivot** is a revolutionary single-page display with many of the benefits of a full-page and a two-page display in a smaller package and for a lower price. In its portrait mode, it's perfect for word processing. In landscape mode, it's great for spreadsheets. In Focus Systems' **5000 CX PC Viewer** is the most advanced color LCD overhead-projection panel. Using three 17-level LCD panels of cyan, yellow, and magenta, it can produce 4,913 colors.

#### BEST SCANNER

##### JX-600

In 1990, the greatest advancement in scanning technology was the addition of color. Many scanner manufacturers added color models to their gray-scale-scanner lineup, but Sharp really added some power to its **JX-600**. The **JX-600** is a one-pass flatbed scanner capable of scanning flat images and transparencies at a maximum resolution of 600 dpi. To ensure true 24-bit-color accuracy, the **JX-600** scans in 10-bit-per-color digital data, and after the image is

processed, it saves 8-bit-per-color data. The hardware's Modulation Transfer Function helps sharpen an image's obscure edges. These advanced features make the **JX-600** a powerful tool for high-quality desktop color work.

#### HONORABLE MENTIONS

The **Focus Color Scanner**, from Agfa Compugraphic, is a three-pass, 400-dpi color scanner that produces high-quality color output. Its MC View Color software allows precise control calibration as well as image editing. In the field of high-end production-level OCR, Calera's **CDP 9000/TopScan** is the one to choose. It is easy to set up and provides blazingly fast as well as highly accurate optical character recognition.

#### BEST MONOCHROME- OUTPUT DEVICE

##### QMS PS-410

In a printer market saturated with new products and breakthrough pricing, the **QMS PS-410**, from QMS, leads the way in innovation and bang for the buck. This low-priced personal printer has a fast processor and provides the ideal solution for mixed-platform environments, in that it can accept data from all three ports simultaneously and automatically switch among printer languages.



▼▼▼  
BREAKTHROUGH PRODUCT  
OF THE YEAR

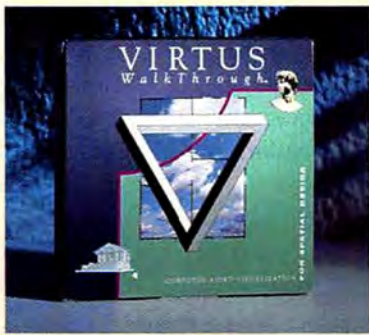
**VIRTUS WALKTHROUGH**

What would your house look like if you added, say, a garage — or even another floor? And how might that new addition appear as you walked around inside? This sort of visualization is already available on ultraexpensive workstations in architectural and engineering firms, but now Mac users too can build, rebuild, and explore complex imaginary structures.

Unlike photo-realistic rendering programs (which sacrifice speed to obtain fine detail), the new virtual-reality program **Virtus WalkThrough 1.0**, from Virtus, provides a real-time interactive tour of an imaginary space. You simply move the cursor position on-screen to navigate. WalkThrough allows simultaneous 2-D and 3-D views plus the ability to locate the user's point of view at any desired height or angle. Also included is a comprehensive color library of architectural forms and furniture that users can arrange and edit as necessary.

WalkThrough has many potential applications aside from architectural design. The U.S. Coast Guard is already using the program to create interior views of large ships, and the FBI anticipates using it to coordinate rescues and criminal investigations. (Come to think of it, the average bank robber might also consider this program a breakthrough.)

By combining 3-D, color, virtual reality, and new ways to extend the Mac interface, WalkThrough is a tour de force that's even more impressive in that it's only the first product from an innovative new company.



HONORABLE MENTIONS

Qume's **CrystalPrint Express** has a raw engine speed of 12 pages per minute, thanks to its RISC processor, and it can print at a horizontal resolution of 600 dpi. Texas Instruments' inexpensive **microLaser PS35** is the smallest PostScript printer with a 6-page-per-minute engine.

BEST COLOR-OUTPUT DEVICE

**KODAK XL7700**

The **Kodak XL7700** ushers in the era of photo-realistic color printing. Using continuous-tone technology and printing 11-x-11-inch images, the XL7700 pushes color printing to its logical conclusion: producing images that look as good as the original.

HONORABLE MENTIONS

The **Tektronix Phaser PX** and the **Seiko ColorPoint PS** are simply the best values in PostScript color printers. Using thermal wax engines and their own proprietary dithering algorithms, they offer high-quality images. Both also offer simultaneously active data ports, providing an ideal color network solution.

BEST STORAGE PRODUCT

**SBT-1288NP**

Decipher its name, and you'll find that the **SBT-1288NP** is perhaps MicroNet Technology's

most capable storage system for servers and high-end workstations. SBT stands for "shoe box tower," and that tower houses two 644-megabyte spliced Wren-Runner-2s for an ultrafast seek time. The drives are capable of much higher throughput than the Mac's built-in SCSI port, so MicroNet created the NuPORT, a SCSI-2 DMA NuBus host card that enables the system to run at data-transfer rates of up to 3 megabytes per second. With a price tag of \$12,990 for the entire package, it's an expensive — but powerful — storage system.

HONORABLE MENTIONS

Golden Triangle's **DiskTwin** is the first Macintosh product that offers true disk duplexing in an easy-to-install system. It maintains a continuous copy of your primary hard-disk drive on a twin of equal or greater size. DiskTwin uses a NuBus SCSI card and a cdev to offer performance that's up to par with single-drive speed. When MacUser Labs tested magneto-optical drives recently, SuperMac Technology's **LaserFrame** emerged as one of the fastest drives tested. Manufactured specifically as a storage system for graphics professionals, the LaserFrame enables you to perform true hard-disk partitioning and DES encryption.



## EDDY WATCH: 1991 CONTENDERS

As soon as we've ripped open the envelopes and announced the Eddy winners for one year, it's already time to jump right in with the research for next year's awards. It's still too early to project the winners, but here's a look at some of the early leaders we're keeping our eyes on.

### 4th Dimension 2.1

**(ACIUS):** In 1990, the 4D family gained a performance-boosting compiler, a spreadsheet module, and more. Next year's offspring could make it the definitive Mac database program with mainframe data access, even more speed, and more-innovative modules.

**40 MHz PowerCache IIci (DayStar Digital):** For not much more than the price of a cache card, you can get near-IIcx speed for your IIci.

**ADDmotion 1.0 (Motion Works):** With its simple, snappy animation capabilities, ADDmotion may be the best HyperCard add-in of 1991.

**Animation Works 1.0 (Gold Disk):** How do you top easy 8-bit-color animation at a bargain price? By adding run-time capability on DOS and Mac platforms.

**C-Cube Compression Master (C-Cube Microsystems):** Compression is expanding — and C-Cube promises to be one of the biggest names in the field.

**Cyclops (Proxima):** If you've ever wanted a 10-foot touch screen, you're in luck.



The Cyclops interactive projection system may be the hit of the presentation circuit.

**DiskPaper 1.0 (Farallon Computing):** Voice, text, and graphics will transform into a print-to-disk image that's readable by any Macintosh — even without the original application.

**DVA-4000/Macintosh (VideoLogic):** Mix live video and Mac graphics, with VideoLogic's DVA 4000. You also get complete authoring software for interactive television on your desktop.

**Enhance 2.0 (Micro-Frontier):** In version 2, this data-analysis tool metamorphoses into an image-retouching tool.

**ElectricImage (Electric Image):** This may be the ultimate high-end 3-D-animation program, with expert tools for film and video.

**Excel 3.0 (Microsoft):** Oh, yeah — Microsoft. It seemed to be too preoccupied with something called Windows to do much for the Macintosh in 1990. But 1991 will be another story, starting with

Excel's new features and revamped user interface.

**FreeHand 3.0 (Aldus):** Look for a simplified interface, better type handling and color control, enhanced screen-redraw speed, as well as awesome layering capabilities.

**FoxPro/Mac (Fox Software):** New superfast "Rushmore" optimization and simplified SQL syntax will automate Fox's multi-user relational-database program.

**if:X (Softview):** This might be the program that finally makes forms automation easy — and smart.

**Infini-D 1.0 (Specular International):** In an affordable, easy-to-use package, Infini-D brings high-resolution 3-D ray tracing to Mac animation.

**Informed Manager (Shana):** Look for this upgrade to a very strong database-program/business-forms combination.

**Kodak Photo CD (Kodak):** You shouldn't expect to see this system

(which develops 35mm snapshots directly to CD-ROM) on next year's Eddy list — it's not due out until 1992.

**Lotus Improv (Lotus Development):** This NeXT spreadsheet program could take the Mac by storm — but only if Lotus ports it.

**MacDraw Pro (Claris):** More than a hundred new features—including 32-bit-color support — should rejuvenate this classic.

**Oasis 1.0 (Time Arts):** Painterly painting tools are just the start of why Mac artists are anxious for Time Arts to unveil its new product.

**Orange386 coprocessor board (Orange Micro):** The best of both worlds — a powerful DOS board for the Mac with a full on-board '386 computer.

**PageBrush (Mouse Systems):** With its unique "stitching" capability, this scanner combines the convenience of a hand-held device with the flexibility of free-form scanning.

**Personal Press 1.0 (Silicon Beach):** Easily the most



overdue product on the 1991 Eddy Watch roster (note that it's the only holdover from the 1990 list), Personal Press may give Publish It Easy! a run for the low-end page-layout crown.

**PixelPaint Professional 2.0 (SuperMac Technology):** A completely new version of this popular program with 32-bit-color power.

**Satori Components (Satori):** If you've been waiting for a powerful and simple modular approach to Mac-based accounting, Satori may bring you to Nirvana in 1991.

**Serius Business 1.0 (Serius):** Why do you need a multidimensional spreadsheet? The benefits are serious.

**Upfront 1.0 (Alias Research):** Fast and easy 3-D modeling.

**Video F/X (Digital F/X):** The Video F/X box will turn your Mac into a full editing system by controlling two or three VCRs that work with its high-speed bus for laying PostScript text and graphics straight onto videotape.

**Voice Navigator software (Articulate Systems):** With sound-input capabilities standard on the new Mac CPUs, Articulate Systems is expected to release a software-only version of its voice-recognition system.

**WordPerfect for the Macintosh 2.0 (WordPerfect):** Word processing promises to scale new heights in 1991.

## DIRECTORY

### Accents & Borders

3G Graphics  
11410 N.E. 124th Street  
Suite 6155  
Kirkland, WA 98034  
(206) 367-9321  
\$129.95

### Accountant, Inc. 2.0

Softsync/BLOC  
800 S.W. 37th Avenue  
Suite 765  
Coral Gables, FL 33134  
(800) 955-1888  
(305) 445-0903  
\$595

### AlisaMail 1.0

Alisa Systems  
221 E. Walnut Street  
Suite 175  
Pasadena, CA 91101  
(800) 628-3274  
(818) 792-9474  
\$3,000 for ten users

### Animation Stand 1.2

Linker Systems  
13612 Onkayha Circle  
Irvine, CA 92720  
(714) 552-1904  
\$2,000

### Aspects 1.0

Group Technologies  
1408 N. Fillmore Street  
Suite 10  
Arlington, VA 22201  
(800) 476-8781  
(703) 528-1555  
\$299 per workstation

### Authorware Professional for Macintosh 1.6

Authorware, Inc.  
8500 Normandale Lake Blvd.  
Ninth Floor  
Minneapolis, MN 55437  
(612) 921-8555  
\$8,000

### CDP 9000/TopScan

Calera Recognition Systems  
2500 Augustine Drive  
Santa Clara, CA 95054  
(800) 544-7051  
(408) 986-8006  
\$31,950

### Cheshire 1.0

Abbott Systems  
62 Mountain Road  
Pleasantville, NY 10570  
(800) 552-9157  
(914) 747-3116  
\$125

### CIS-4520

Barneyscan Corp.  
1125 Atlantic Avenue  
Alameda, CA 94501  
(415) 521-3388  
\$27,995

### Clariscad 2.0

Clariscad Corp.  
5201 Patrick Henry Drive  
P.O. Box 58168  
Santa Clara, CA 95052  
(408) 987-7000  
\$899

### ClearAccess 1.21

Fairfield Software, Inc.  
200 W. Lowe  
Fairfield, IA 52556  
(800) 522-4252  
\$349

### ColorPoint PS

Seiko Instruments U.S.A., Inc.  
Graphics Division  
1130 Ringwood Court  
San Jose, CA 95131  
(800) 873-4561  
(408) 922-5900  
A size, \$6,999  
B size, \$9,999

### ColorStudio 1.1

Letraset  
40 Eisenhower Drive  
Paramus, NJ 07653  
(800) 343-8973  
(201) 845-6100  
\$995

### Compactor 1.1

\$25 shareware fee  
Available from on-line  
services and user groups

### Cosmic Osmo CD-ROM

Activision  
3885 Bohannon Drive  
Menlo Park, CA 94025  
(415) 329-0500  
\$79.95

### CrystalPrint Express

Qume Corp.  
500 Yosemite Drive  
Milpitas, CA 95035  
(800) 223-2479  
(408) 942-4000  
\$5,595

### DataClub 1.1

International Business  
Software  
1270 Oakmead Parkway  
Suite 314  
Sunnyvale, CA 94086  
(800) 733-2822  
(408) 720-0170  
Three-user pack, \$295  
Ten-user pack, \$795

### Deck

Digidesign  
1360 Willow Road, Suite 101  
Menlo Park, CA 94025  
(800) 333-2137  
(415) 327-8811  
\$349

### Descartes 1.0

Intermap  
13 Dartmouth College  
Highway  
Lyme, NH 03768  
(603) 795-4751  
\$795





DIRECTORY, CONTINUED

**DeskPaint 3.03**

Zedcor  
4500 E. Speedway, Suite 22  
Tucson, AZ 85712  
(800) 482-4567  
(602) 881-8101  
\$199.95

**Discis Books**

Discis Knowledge Research  
45 Sheppard Avenue E.  
Suite 410  
Toronto, Ontario M2N 5W9  
Canada  
(800) 567-4321  
(416) 250-6537  
\$69.95 to \$89.95

**DiskDoublers 3.0**

Salient Software  
124 University Avenue  
Suite 103  
Palo Alto, CA 94301  
(415) 852-9567  
\$79

**DiskTwin**

Golden Triangle Computers  
4849 Ronson Court  
San Diego, CA 92111  
(619) 279-2100  
\$999

**DynaPerspective 2.0**

Dynaware Corp.  
950 Tower Lane, 11th Floor  
Foster City, CA 94404  
(800) 445-3962  
(415) 349-5700  
\$995

**Encore 1.31**

Passport Designs, Inc.  
625 Miramontes Street, #103  
Half Moon Bay, CA 94019  
(415) 726-0280  
\$595

**EtherPrint**

Dayna Communications  
50 S. Main Street, Fifth Floor  
Salt Lake City, UT 84144  
(801) 531-0600  
\$499

**FileMaker Pro 1.0**

Claris Corp.  
5201 Patrick Henry Drive  
Santa Clara, CA 95052  
(800) 544-8554  
(408) 987-7000  
\$299

**FilmMaker 1.0**

Paracom, Inc.  
1725 Montgomery Street  
San Francisco, CA 94111  
(415) 956-4091  
\$695

**5000CX PC Viewer**

In Focus Systems  
7770 S.W. Mohawk Street  
Tualatin, OR 97062  
(800) 327-7231  
(503) 692-4968  
\$5,995

**Focus Color Scanner**

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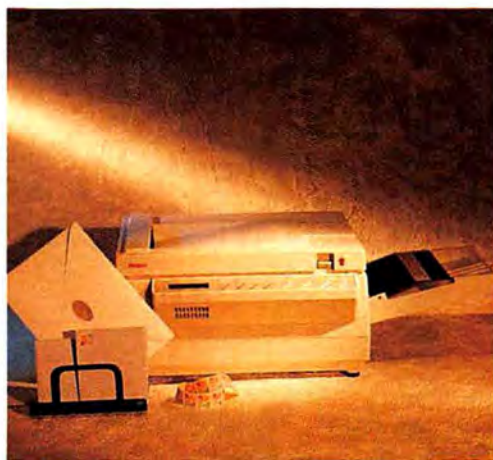


# PERSONAL POSTSCRIPT Printers

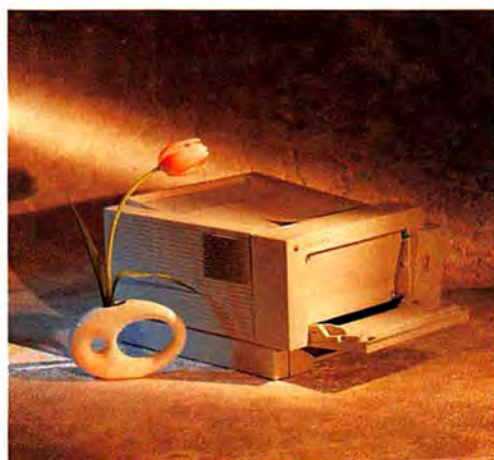
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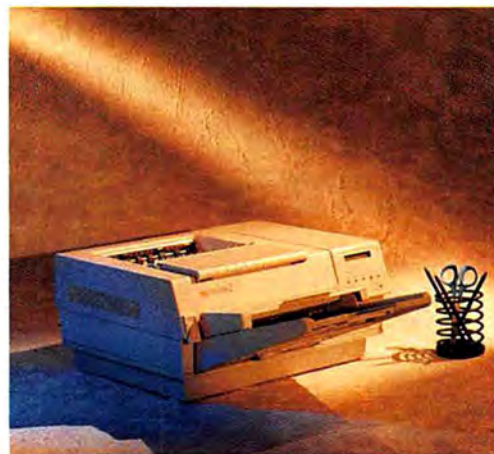
**Abaton LaserScript**



**Apple Personal LaserWriter NT**



**Hewlett-Packard LaserJet IIP**



**NEC Silentwriter 2 Model 90**

**O**ne person, one computer" has long been Apple's philosophy. For PostScript printers, however, Apple has extolled the virtues of sharing—a laudable virtue, but when your single-page memo is stuck behind someone's 50-page



report, the drawbacks of sharing are obvious. Steep PostScript-printer prices have postponed the doctrine of "one person, one computer, one printer"—but this once-distant ideal is now becoming an affordable reality. A new crop of printer engines, lower chip prices, and stiff competition are putting

PostScript printers onto desktops everywhere. Maybe your desk should be next.

These new printers — smaller, cheaper, and in some cases faster than their ancestors — usher in a new era of personal PostScript printing for modest budgets. MacUser Labs looked at ten

PostScript printers, all with list prices less than \$3,500 and many with street prices hovering close to the \$2,000 mark. Some, such as Apple's Personal LaserWriter NT, are specifically intended as personal printers, whereas others fall into the category by virtue of their competitive pricing.



Fujitsu RX-7100PS



GCC BLP II



GCC BLP IIS



Okidata OL840



QMS PS-410



Texas Instruments microLaser PS35

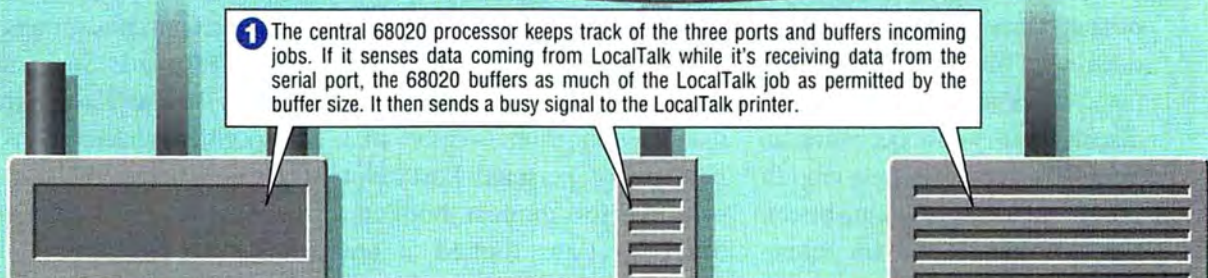


## How It Works: One Printer for Macs and PCs

The QMS PS-410 can receive data on all three ports — LocalTalk, serial, and parallel — simultaneously.



**1** The central 68020 processor keeps track of the three ports and buffers incoming jobs. If it senses data coming from LocalTalk while it's receiving data from the serial port, the 68020 buffers as much of the LocalTalk job as permitted by the buffer size. It then sends a busy signal to the LocalTalk printer.



**Serial**

**AppleTalk**

**Parallel**

**Buffer**

**Buffer**

**Buffer**

**2** Users can set the buffer size for each port; the default size is 16K. A Z-80 microprocessor handles the LocalTalk protocols and languages, and the 68020 handles communication over the serial and parallel ports.

**3** The file is then sent to the ESP (emulation-sensing processor). The ESP code — run by the 68020 — looks at the first 256 bytes of the file and determines the file type: PostScript, PCL, or another language.

**Emulation-sensing processor**

**4** The ESP then sends the file to the appropriate language code to rasterize the page.

**PCL**

**PostScript**

**Another language**

**Printer engine**

**5** The 68020 processor uses the relevant language to convert the file into dots on the page.



The QMS PS-410 is the ideal network printer. Its ability to handle print jobs from both Macs and PCs without user intervention makes it an ideal network solution for mixed-platform environments. Macs and PCs can use all three ports at once and send print jobs in different types of languages — PostScript, PCL, or other optional languages supported by the printer. In the Mac world, there are only two types of printers: PostScript and QuickDraw. PostScript and QuickDraw are PDLs (page-description languages). The two languages define a set of commands that describe what goes on a page. To select a printer, open your Mac's Chooser and select Apple's LaserWriter driver for a PostScript printer or an individual driver for a QuickDraw printer.

Other computers should have it as easy. Scores of other printer languages used on non-Mac platforms range from languages specific to plotters and their vector-based descriptions — such as Hewlett-Packard's HPGL — to simple formatting protocols that define communication to a daisywheel printer — such as Diablo 630.

The king of printers in the DOS world is the Hewlett-Packard LaserJet, which uses its own language called PCL. PCL comes in different versions — PCL 3; PCL 4; and the newest, PCL 5. PCL is not as powerful as PostScript — PostScript has more graphics capabilities than any of the PCL languages and only PCL 5 has outline fonts. Like most other printer languages, PCL is mainly a text-oriented description. Most manufacturers include other languages besides PostScript in their printers to keep them compatible with computers other than the Mac. Manufacturers also include more interfaces than LocalTalk, because most DOS machines use serial or parallel interfaces.

All the printers are equipped with either Adobe PostScript or a competing clone to produce the highest-quality text, graphics, and images you can get on the desktop. The one clone-equipped printer, the Abaton LaserScript, had no incompatibilities with any of the software we tested, nor did it have any advantages. The Hewlett-Packard LaserJet IIP achieves PostScript-printer status only after the addition of a LocalTalk interface, a PostScript cartridge, and extra RAM — a stiff \$1,530 manufacturer upgrade.

The other eight printers are all true plug-and-play PostScript. The Apple Personal LaserWriter NT and the QMS PS-410 are based on the same Canon engine, whereas the GCC BLP IIS and the Okidata OL840 both have an Okidata engine that uses LEDs (light-emitting diodes) rather than the more common laser. The GCC BLP II has a slower version of the same Okidata engine, and the NEC Silentwriter 2 Model 90 uses a new Minolta engine that is very similar to Canon engines. The Fujitsu RX-7100PS is the only dual-bin printer in the category and owes its presence here to a price cut of \$1,200. Texas Instruments' microLaser PS35 was one of the winners in our

last look at PostScript printers (see "The Letter-Perfect PostScript Printer," October '90, Buyer's Guide, page 5), but it now faces much fiercer competition.

We put the printers through our usual exhaustive set of speed, image-quality, and ease-of-use tests. To our surprise, we found no clear image-quality winner — almost every printer more than met our high expectations. However, there were noticeable differences in speed as well as a broad range of prices, features, and sizes (see Figure 1).

Arriving at an overall measure of printer speed is difficult, because speed depends greatly on the type of document being printed. Simple text is relatively easy for a printer to handle, but complex graphics require intensive processing in the printer (one reason why each of these printers is more powerful and more expensive than a Mac Classic). No printer was faster than the others in all applications, but the QMS PS-410 was by far the fastest when printing pages that push PostScript to its limits — such as those containing complex graphics.

Our jury of printer professionals found very little difference in image

## Choosing the Right Paper

The type of paper you use in your printer can make a dramatic difference in the quality of your output. For everyday printing, use standard bond paper in the 18- to 22-pound range — you'll get good results at little cost. Although some vendors state that their printers accept paper as light as 16-pound, this lighter weight is more prone to misfeeds and is more sensitive to fluctuations in humidity that can cause the paper to wrinkle.

If you want the best possible image quality, pay the premium price for a coated paper specially formulated for laser printers. Most large paper companies make at least one such type of paper. Some, such as Hammermill, produce several varieties — some coated on only the printing side with the other side formulated to accept pasteup wax and others coated on both sides for duplex (two-sided) printing.

Heavily textured paper — such as *laid*

bond — should generally be avoided. Because the laser-printing process uses pressure from heated rollers to fuse the toner to the paper, a textured paper makes it difficult to apply pressure evenly — in some cases the toner flakes and separates from the paper. Textured papers also leave more paper dust inside the printer. For the same reason, you should also avoid paper with frayed or uneven edges.

Duplex printing is often problematic on laser printers — the first side prints without problems, but when you run the paper through the printer a second time, the paper may wrinkle or jam. This is because the heat from the fusing process bakes all the moisture out of the paper, leaving it dry and brittle. If you have this problem, try waiting 24 hours before you try running the paper through a second time. This gives the moisture content a chance to stabilize.



Figure 1: Printer Footprint

Texas Instruments microLaser PS35

13" x 14"

Apple Personal LaserWriter NT

15" x 18"

QMS PS-410

13.5" x 25"

Hewlett-Packard LaserJet IIP

14" x 25"

Okidata OL840

17" x 23"

Abaton LaserScript

16" x 25"

GCC BLP II and IIS

18" x 23"

Fujitsu RX-7100PS

16" x 27"

NEC Silentwriter 2 Model 90

18" x 25"

Macintosh Classic &amp; keyboard

16" x 16"

Figure 1: Where desk space is at a premium, the Texas Instruments microLaser fits in nicely. The microLaser is indeed "micro" — it has the smallest footprint, followed by the Apple Personal LaserWriter NT. The NEC Silentwriter 2 Model 90 loses out with its oddly placed paper tray, and the Fujitsu RX-7100PS is the second largest. The other six personal printers fit in between.

quality. In fact, the differences were so slight that they could be attributed only to variations in the individual test printer we received (rather than the printer model) and to differences in the consumables — the toner cartridge and the drum. And we again proved that if you're especially concerned about image quality, you should pay particular attention to the paper you use (see the "Choosing the Right Paper" sidebar).

You can't choose a personal PostScript printer based on image — output from one 300-dpi printer looks very much like that from another. In particular, we were pleasantly surprised by the performance of the LED engines used in the Okidata, Fujitsu, and GCC printers. In our previous testing of PostScript printers, those with LED rather than laser engines produced noticeably inferior images — this is no longer the case. However, we did find that correct adjustment of the image-density control on the LED engines in general and on the Fujitsu RX-7100PS in particular was more critical for obtaining good image quality than for the laser engines.

### Setting Up

The first step in setting up a printer is installing the consumables, and we're happy to note that it is getting easier. The Canon engine used by the Apple, QMS, and Hewlett-Packard printers is still the easiest to replenish, because the toner and the drum come in a single sealed cartridge that simply slides into the printer. The NEC Silentwriter 2 Model 90 features a Minolta engine that also has single-cartridge consumables, with a long life of 6,000 pages. The Fujitsu RX-7100PS uses a single cartridge too and scores points for including a pair of white gloves with each new cartridge — who says elegance is passé?

The Okidata engines in the Okidata and GCC printers use separately replaceable toner and drum cartridges. Although the process is quick and clean, we were a little concerned about the printers' seemingly flimsy all-plastic

internal construction — especially considering the rather short 2,500-page life of the toner cartridge, which necessitates frequent mucking about with the printers' innards. We experienced no problems when using any of the printers, however, so the construction deficiencies may be just superficial.

The Texas Instruments microLaser PS35 has three separately replaceable elements: The toner cartridge lasts 3,000 pages, the developer lasts 25,000 pages, and the drum should be replaced after 40,000 pages. Although this may seem to be a hassle, 25,000 pages is a lot of pages — especially for a personal printer. Most users won't have to deal with anything but the toner cartridge for at least a year. The

### On the Horizon

Sure, the printers in this report are tempting, but don't sign on the dotted line just yet. Even more new affordable personal PostScript printers will be released by the time you read this — be sure to check them out before you buy.

The most intriguing developments come courtesy of Microsoft, the company behind TrueImage, a new PDL (page-description language) and a PostScript competitor (also a PDL). Although Microsoft claims that TrueImage will do everything that PostScript can do, we had a lot of unanswered questions the last time we looked at PostScript printers (see "PostScript Evolution or Revolution?" October '90, Buyer's Guide, page 44). Most of those questions still remain unanswered, but the announcement of TrueImage printers scheduled to ship in the first quarter of '91 puts real muscle behind Microsoft's challenge to PostScript.

The first company to announce a TrueImage printer was Microtek, with the TrueLaser. TrueLaser sports a low price (\$2,695) and is the first printer to use a new speedy RISC chip, the AMD 29000 — Adobe will also include the AMD 29000 in its line of PostScript controllers. TrueLaser uses the same 6-ppm TEC engine as the Abaton LaserScript does. Microtek, 680 Knox Street, Torrance, CA 90502; (213) 321-2121.

Right on the heels of Microtek is LaserMAX, known mainly for its higher-resolution printers. The LaserMAX 400



Abaton LaserScript also has separate toner, developer, and drum units, which need to be replaced more often than those in the microLaser PS35. The LaserScript also comes with a separate page counter that must be replaced along with the drum. This TEC engine is proving popular (see the "On the Horizon" sidebar), but we wonder about the reason behind its rather Byzantine method of replacing consumables.

Configuring the printers to work with the Mac is straightforward. The Apple Personal LaserWriter NT is predictably the simplest — literally plug-and-play, because it has no front-panel controls to worry about. With the others, all that is required is to set

switches that make PostScript the default language and LocalTalk the default interface. The microLaser PS35 deserves a special mention for an excellent set of help pages stored in and printed by the microLaser itself, including one page that graphically displays the menu structure of the front-panel controls. The Hewlett-Packard LaserJet IIP is a little more difficult to set up than the others, because you must also install the PostScript cartridge, the LocalTalk card, and extra RAM. The manual for the PostScript cartridge does give clear instructions.

We used both a standard-sized envelope and a sheet of heavy letterhead stock to test each printer's manual-paper-feed capability. None of the

printers had any difficulty with either, although Fujitsu's manual does state that "envelopes should not be printed on the RX-7100PS." With our textured letterhead stock, the Canon engines did a noticeably better job of fusing the toner to the paper than did the others, with the Fujitsu RX-7100PS giving the poorest image quality. In general, textured paper doesn't work well with laser printers.

All the printers have adequate paper trays except for the QMS PS-410 and the Hewlett-Packard LaserJet IIP. Both of these come equipped only with a 50-sheet "multipurpose tray" that folds out from the front of the printer. The Personal LaserWriter NT, which uses the same engine, includes a 250-sheet

Personal Printer boasts a low sticker price of \$1,995 and 400-dpi resolution. It lacks an internal RIP, however; instead, it uses the Mac to process a software version of TrueImage. Your Mac runs the program, which sends a raster to the printer — tying up your Mac in the process. The LaserMAX 400 uses a NuBus card as its interface, an odd solution for a low-cost personal printer, because only NuBus-equipped Macs of the Mac II family can use it. LaserMAX is incorporating TrueImage throughout its line of printers. LaserMAX Systems, 7150 Shady Oak Road, Eden Prairie, MN 55344; (612) 944-9696.

Abaton has announced a new version of its LaserScript printer, the LaserScript II, which will offer TrueImage. The original LaserScript used the TrueImage PDL's precursor, the Bauer clone. Microsoft bought Bauer and reworked the code to create TrueImage. We were disappointed by the slow performance of the LaserScript and hope that the new TrueImage version will be an improvement. The LaserScript II uses a 25-megahertz NS 32CG160 processor — twice as fast as the original LaserScript's processor — which should help boost performance. The price wasn't firm at the time of this writing, but it should be in the same ballpark as that of the other TrueImage printers. Abaton, 48431 Milmont Drive, Fremont, CA 94538; (415) 683-2226.

The printers that really made us stand up and take notice were NewGen's TurboPS/

300p and TurboPS/360p, which offer about every feature you'd want in any PostScript printer. Both use a 16-megahertz Intel 80960CA RISC processor, the same 4-ppm Canon engine used in the Apple Personal LaserWriter NT and the QMS PS-410. Like the QMS printer, both the NewGen printers have the ability to simultaneously use all three data ports and automatically recognize different printer emulations (see the "How It Works" sidebar). As if that weren't enough, the TurboPS/360p model uses proprietary IET (Image Enhancement Technology) to smooth characters and curves and boosts the resolution of the output to 600 x 300 dpi. Both models also offer a SCSI port (to date, only the GCC BLP II and IIS printers offer SCSI in a personal printer). In addition, you can upgrade the printers' RAM to a whopping 16 megabytes, and they also use Intel's flash ROMs, so you can make any updates to TrueImage from your Mac. The prices for the TurboPS/300p and TurboPS/360p will be \$2,495 and \$2,695, respectively. NewGen, 17580 Newhope Street, Fountain Valley, CA 92708; (714) 641-8900.

Meanwhile, there have also been some developments in the Adobe camp. We tested an early version of a new Panasonic printer, the KX-P4455 Laser Partner (\$3,495), a large 11-ppm PostScript printer hand-capped with a modest 68000 processor. Although the Panasonic proved faster than other printers we tested on text, its slow processor made it sluggish on the other

complex documents. We also experienced problems with the LocalTalk interface, which Panasonic is working on and should have resolved by the time you read this. Panasonic, 2 Panasonic Way, Secaucus, NJ 07094; (800) 222-0584.

All the news about the TrueImage printers has overshadowed the introduction of the first Adobe PostScript Level 2 printer, the DataProducts LZR 660 (\$2,995). The LZR 660 is the first to offer Adobe PostScript in a RISC processor, the Weitek 8200. The Weitek RISC chip is used in the Qume CrystalPrint printers, which proved to be the fastest PostScript printers we've ever tested (see "The Next Wave of Personal PostScript Printers," October '90, Buyer's Guide, page 42). PostScript Level 2 is also purported to be faster than Level 1, so expect this printer to come close to its 6-ppm-engine rating with more than simple text files. Besides speed improvements, PostScript Level 2 promises additional features such as data compression, new pattern and form caching for greater speed, new halftoning algorithms, composite fonts, device-independent color spaces, and support for printer-specific features. It's questionable how much of this will be used in the personal printer, but Level 2 should have an even greater impact on the market than Level 1. Dataproducts, 6200 Canoga Avenue, Woodland Hills, CA 91367; (818) 887-8000.

— Paul Yi



Figure 2: Print Quality

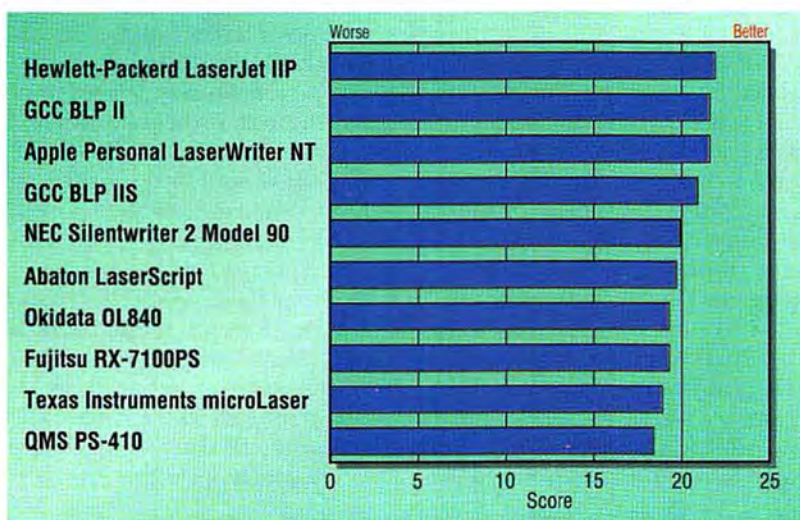
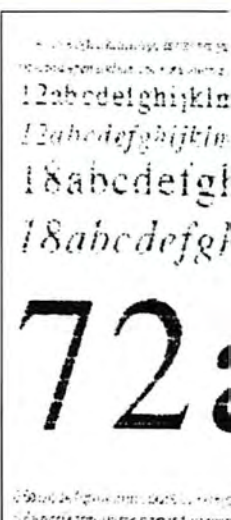


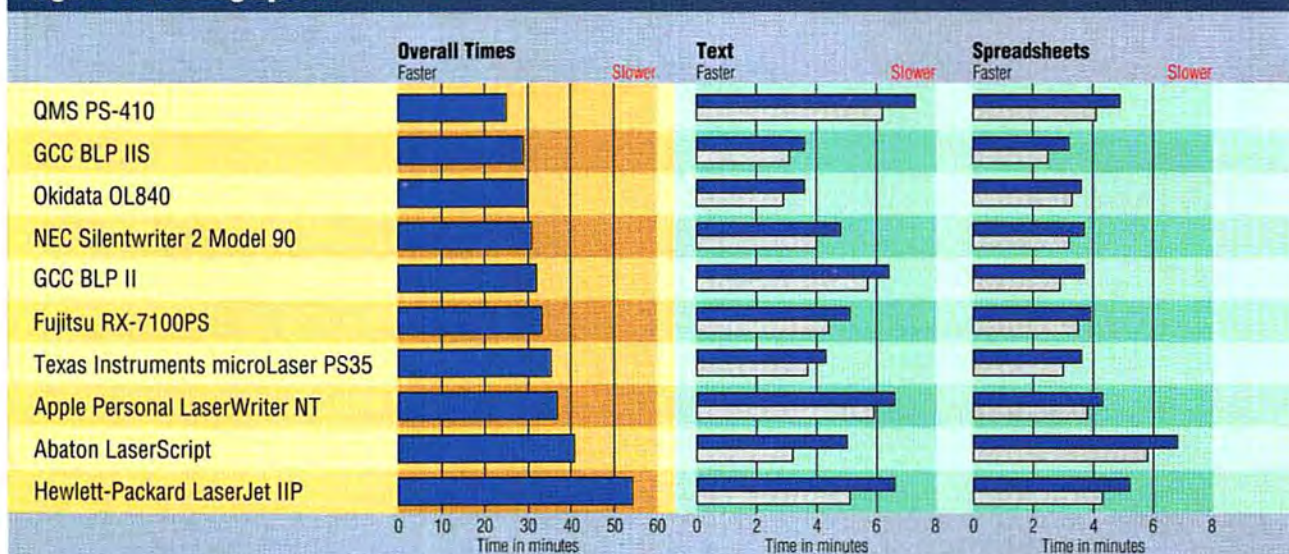
Figure 2a: Our jury of printer professionals looked at a broad range of image samples and decided that all the personal PostScript printers had good-to-excellent image quality — the rating differences between their top and bottom choices were minuscule.

Figure 2b: Although image quality isn't an issue for the personal PostScript printers, the differences between laser or LED toner engines and other "personal" printer engines — dot matrix or inkjet — is substantial. A 144-dpi dot-matrix ImageWriter doesn't come close to the sharp text of a 300-dpi laser engine. The 300-dpi inkjet Hewlett-Packard DeskWriter comes closer but is still inferior. No printer can come close to matching a Linotronic's 1,270-dpi output.



Apple ImageWriter

Figure 3: Printing Speed



**Figure 3:** Printing speed is a combination of raw engine speed and microprocessor power. For simple text documents, engine speed is most important. Graphics-intensive documents such as Adobe Illustrator files benefit the most from a fast microprocessor.

#### Overall Times:

The overall winner across the five time tests is the QMS PS-410. Its 16.6-megahertz 68020 microprocessor overshadows its relatively slow 4-ppm engine. The GCC BLP IIS, with its 8-ppm engine, comes in a close second.

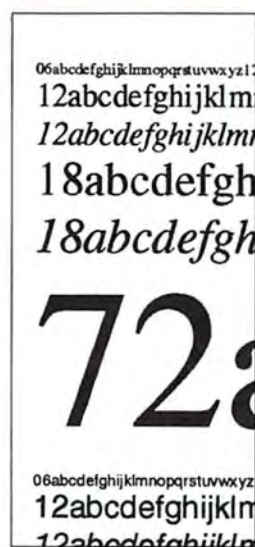
#### Text:

The GCC BLP IIS and the Okidata OL840 print text fastest, thanks to their 8-ppm engines. Our 20-page Courier test document asks little of the microprocessor — proven by the last-place finish of the QMS PS-410 and its powerful microprocessor.

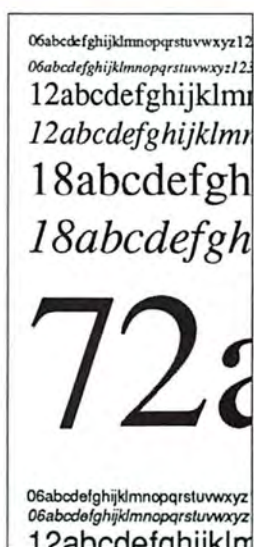
#### Spreadsheets:

The Abaton LaserScript's poor performance when printing a ten-page spreadsheet file bodes ill for upcoming Microsoft TrueImage printers, because the LaserScript uses the precursor PDL clone to

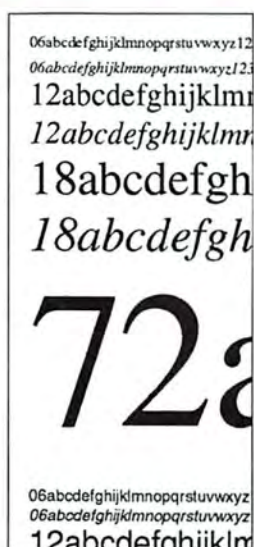




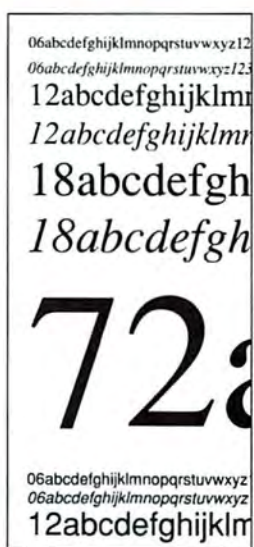
Hewlett-Packard DeskWriter



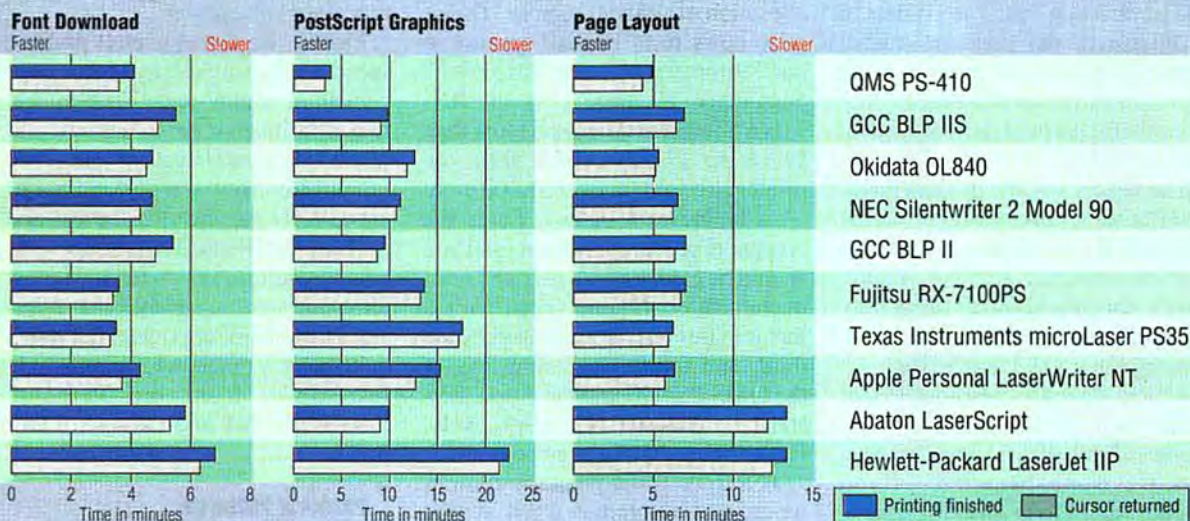
Apple Personal  
LaserWriter NT



GCC BLP IIS



Linotronic film



TrueImage, the Bauer PostScript clone.

#### Font Download:

A grueling document containing 17 downloadable fonts tests the ability of a printer's microprocessor to handle the on-board memory and the AppleTalk protocol. The Fujitsu RX-7100PS and Texas Instruments microLaser PS35 prove the best in this area, whereas the Hewlett-Packard LaserJet IIP finishes last.

#### PostScript Graphics:

Preparing complex PostScript graphics that are produced by

Adobe Illustrator is entirely microprocessor-dependent. The clear winner in the PostScript graphics test is the QMS PS-410, owing to its fast 68020 microprocessor. The clear loser in this test is the Hewlett-Packard LaserJet IIP.

#### Page Layout:

A page-layout document tests all a printer has to offer: microprocessor, engine speed, LocalTalk interface, and memory management. The winner is the QMS PS-410, with the Abaton LaserScript and the Hewlett-Packard LaserJet IIP far behind.



paper tray that fits inconspicuously under the printer. QMS and Hewlett-Packard both offer 250-sheet trays as options at extra cost, although we'd prefer that they were included as standard equipment.

## Personal Speed

Our tests showed that printer speed depends very much on the kind of material being printed, but the QMS PS-410 wins out in overall speed, with the Hewlett-Packard LaserJet IIP a distant last (see Figure 3).

Performance in our text-document test, a 20-page Word document in 12-point Courier font, depends almost exclusively on engine speed, because Courier is a built-in printer font that requires very little processing. As expected, the printers ranked in order of their engine speeds, with the 8-ppm (pages per minute) Okidata OL840 and the GCC BLP IIS printers finishing first and the 4-ppm GCC BLP II, the HP LaserJet IIP, the Apple Personal LaserWriter NT, and the QMS PS-410 finishing last. The printers in the middle of the pack maintained their ranking by engine speed, with the 5-ppm Fujitsu printer finishing slightly behind the 6-ppm printers from Abaton, NEC, and TI.

In our Excel test, the printers maintained the same ranking except that the GCC BLP II finished somewhat faster than we expected and the Abaton LaserScript came in last, finishing fully one and a half minutes behind the next-slowest printer, the LaserJet IIP.

Our font-download test consisted of a single page in Microsoft Word containing 17 Adobe Type 1 downloadable fonts. This is an extreme test — if you typically use 17 fonts on a single page, you're probably in need of *some* kind of professional help — but one that tests PostScript compatibility along with the printer's memory handling and the efficiency of the AppleTalk connection, because large amounts of data are sent to the printer. Our lone clone, the Abaton LaserScript, exhibited no compatibility problems but proved quite sluggish on this test.

## The Bottom Line

It's a great time to buy a personal PostScript printer. New affordable models are flooding the market, and most — if not all — have good-to-excellent image quality. With print quality so consistently good, you have the luxury of buying the least expensive printer that has all the features you need. Of the ten we tested, we can recommend four as standouts in this hotly contested market.

Our overall favorite, the **QMS PS-410** (\$2,795) has the same speedy processor as the Apple LaserWriter II NTX — at half the price. Although its 4-ppm (page per minute) engine makes it somewhat slow for printing plain text, it is by far the fastest printer in processor-intensive applications. If you typically print complex graphics, this is the

printer to get. The PS-410 also keeps all three data ports "live" at all times and features the ability to change emulations on the fly without user intervention. The PS-410 is the choice for small offices that have both Macs and PCs.

The **Apple Personal LaserWriter NT** (\$3,299) is a little slow on complex graphics files, but it's by far the easiest to set up. Unlike the other Canon-engine-based printers, it includes a hearty 250-sheet paper tray. The **NEC Silentwriter 2 Model 90** (\$2,495) is a low-cost leader. Its 6-ppm Minolta engine offers the same single-cartridge convenience as the popular Canon engines, and its 16.7-megahertz 68000 processor put it squarely in the middle on all our performance tests. Its only drawback is

The real surprise was the speedy performance of both the Texas Instruments microLaserPS35 and the Fujitsu RX-7100PS, which we attribute to efficient handling of data through the AppleTalk interface and to intelligent allocation of printer memory. This is good news from Fujitsu, because in our '89 printer report (see "Fit to Print," September '89, page 178), the RX-7100PS failed to download more than 11 of the 17 fonts. Back then, the printer also sold for over \$1,000 more — a telling sign of how fierce the competition is and another reason you should be glad you're a user and not a manufacturer. Engine speed isn't a factor in this test, as evidenced by the third- and fourth-place showings of the QMS PS-410 and the Apple Personal LaserWriter NT, respectively. Both printers have 4-ppm engines.

To test PostScript-processing power, we printed a complex 600K Adobe Illustrator document. The QMS PS-410 was by far the fastest performer here, finishing more than 5 minutes before the second- and third-place entrants, the GCC BLP II and BLP IIS. The rankings in this test went strictly by processing horsepower, from the PS-410's 16.6-megahertz Motorola 68020 to the Hewlett-Packard LaserJet IIP's woefully underpowered 10-

megahertz Motorola 68000. This test also produced the largest range between the fastest and the slowest times — more than 18 minutes. If much of your work consists of complex PostScript graphics, put your money on pure processor horsepower.

Finally, we tested overall printing speed with a single PageMaker page containing a gray-scale TIFF image, two EPS images, some line art, and text in Times and Helvetica fonts. Three printers stood out — the QMS PS-410 was notably speedier than the rest, and the LaserJet IIP and LaserScript were much, much slower — taking almost three times as long as the other printers. The remaining printers fall into a quite narrow range, with surprisingly fast times from the Personal LaserWriter NT and the microLaser PS35.

## Personal Features

In addition to image quality, speed, and ease of use, a wide variety of features may influence your choice of a personal PostScript printer. The Apple Personal LaserWriter NT, for example, uses the same PIC (peripheral-interface controller) chip that controls the serial ports of the super-fast Mac IIx. The PIC offloads AppleTalk-management duties from



a rather large footprint, exacerbated by the paper tray, which projects a full 10 inches from the front of the printer.

Last but not least, we recommend the **Texas Instruments microLaser PS35** (\$2,849). Our pick in our last printer roundup (see "The Letter-Perfect PostScript Printer," October '90, Buyer's Guide, page 5), the microLaser PS35 remains a favorite. Its modular design makes upgrades simple, and it has excellent on-board help and diagnostics. It's speedy, and it packs a 250-sheet paper tray into a tiny footprint. Aggressive discounting puts it in the same price range as the slightly faster but much larger NEC Silentwriter 2 Model 90. It's a particularly good choice for situations in which space is at a premium.



Four personal PostScript printers stood out in a strong field (clockwise from front): the QMS PS-410, the Apple Personal LaserWriter NT, the NEC Silentwriter 2 Model 90, and the Texas Instruments microLaser PS35.

the Personal LaserWriter NT's micro-processor, giving it a speed advantage in AppleTalk-intensive applications—proven by this printer's respectable showing in both the font-download and page-layout tests.

The Fujitsu RX-7100PS is a bit unusual compared with the others. For one thing, it uses an old-style DB-9 LocalTalk connector rather than the round DB-8 connectors used in all printers and Macs since the Plus—evidence of the design's age. To its credit, it's the only dual-bin printer in its price range. Its bundled Select-a-Bin software lets you choose different bins for different pages in a document, enabling you to load one bin with letterhead and the other with plain paper.

The GCC BLP II and the BLP IIS are identical save for their Okidata engines: The BLP II uses a 4-ppm engine, whereas the BLP IIS engine is rated at 8 ppm. The BLP II and BLP IIS are the only printers with a SCSI port, which enables you to attach a hard-disk drive for font storage. Both printers come bundled with GCC's QuickEnvelope DA, which provides a nice solution to printing envelopes.

The QMS PS-410 offers a speedy 16.6-megahertz Motorola 68020 processor (also used in Apple's Laser-

Writer II NTX) at an unprecedentedly low price. It includes 45 fonts instead of the usual 35—the Adobe Garamond and Helvetica Condensed families are the extras. But what really sets the PS-410 off from the competition is its unique ESP (emulation-sensing processor) and Concurrent I/O features (see the "How It Works" sidebar). With Concurrent I/O, all three interface ports—parallel, serial, and LocalTalk—are "live" all the time, enabling you to connect a different computer to each port and to print from each computer without changing any switches on the PS-410.

ESP goes even further. It automatically detects whether the input is PostScript or Hewlett-Packard's PCL (common in the DOS world) and interprets it accordingly, without the need for user intervention. This feature makes the PS-410 a natural choice for small offices with both Macs and PCs.

It's worth noting, however, that this feature didn't prove completely hassle-free. We originally tested the printer with firmware revision 1 and experienced some AppleTalk hangs and unexpectedly slow performance on the AppleTalk-intensive tests. Firmware revision 6 gave much faster performance and seems to have fixed our earlier problems—make sure your

printer is up-to-date. QMS is continuing to work on perfecting its AppleTalk implementation and firmware upgrades are free, so this shouldn't be seen as a major problem. The PS-410's only real drawback is its annoyingly small 50-sheet paper tray—plan on buying the optional 250-sheet paper tray.

## Conclusion

Those who feel that their personal computer deserves a personal printer can now choose from a whole new class of PostScript printers. Each of these compact, affordable units will work well with your Mac, eliminate annoying waits at the printer, and deliver your pages where you need them—on your desk. Although all have good-to-excellent image quality, speed and features separate the winners from the also-rans (see the "Bottom Line" sidebar). As personal printers sprout on desktops everywhere and as long waits around the shared LaserWriter IINT become a memory, the traditional water cooler may regain its rightful place as your office's prime goof-off spot.

**Bruce Fraser is a San Francisco-based author who also has opinions on matters more personal than PostScript printers.**



## Table 1: Features of Personal PostScript Printers

	Abaton LaserScript \$\$\$	Apple Personal LaserWriter NT \$\$\$\$	Fujitsu RX-7100PS \$\$\$	GCC BLP II \$\$\$½
List price	\$2,995	\$3,299	\$3,190	\$2,399
Street price	\$2,300	\$2,399	\$1,795	\$2,095
Comments	Complex consumables setup. Slow.	Easiest printer to use. Large-capacity paper tray.	Only personal printer with two paper trays. Nonstandard interface.	Low sticker price with SCSI port. Good speed for slow engine.
<b>Specifications</b>				
Printer type	PostScript clone (Bauer)	PostScript	PostScript	PostScript
Engine, type	TEC, laser	Canon, laser	Fujitsu, LED	Okidata, LED
Engine life (pages)	300,000	150,000	180,000	180,000/5 years
Monthly duty cycle (pages)	3,000	2,500	3,000	3,000
Microprocessor, clock speed	NS32CG16, 15 MHz	Motorola 68000, 12 MHz	Motorola 68000, 12 MHz	Motorola 68000, 16.7 MHz
Pages per minute	6 ppm	4 ppm	5 ppm	4 ppm
RAM (standard, max.; upgrades)	3 MB, 7 MB; third-party SIMMs	2 MB, 8 MB*	2 MB, 4 MB; 2 MB, \$995	2 MB, 4 MB; 2 MB, \$299
Interfaces	serial, parallel, LocalTalk	serial, LocalTalk	serial, parallel, LocalTalk	serial, parallel, \$149;¹ SCSI, LocalTalk
Printer emulations	HP LaserJet II	Diablo 630, HP LaserJet+	HP LaserJet II	HP LaserJet II, Diablo 630, \$149⁵
<b>Software</b>				
No. of fonts in ROM, type	35, Bitstream	37, Adobe Type 1	35, Adobe Type 1	35, Adobe Type 1
Support for Type 1 and 3 fonts	yes	yes	yes	yes
Bundled software	none	none	QuickLetter, Select-a-Bin	QuickEnvelope DA
<b>Paper handling</b>				
Paper output (image up, down)	up, down	up, down	down	up, down
Paper stock min./max. (pounds)	16/34 lb	16/28 lb	17/28 lb	16/34 lb
No. of trays, page capacity (each)	1, 150	1, 250	2, 150	1, 200
Paper sizes	letter, legal, A4, B5	letter, legal, A4, B5	letter, legal, A4, B5	letter, legal, A4, B5, Executive, Monarch, Com10, C5, DL
Envelope tray (capacity; optional)	50	15; optional, \$89	30	25 – 50; optional, \$89
Other features/options	none	none	none	silent sleep mode
<b>Replacement supplies</b>				
OPC (drum)/copies	\$150/10,000	\$99/3,500	\$289/7,000	\$289/15,000
Toner/copies	\$40/1,500	NA	\$33/6,000	\$33/2,500
<b>Other</b>				
Dimensions (W x D x H, in.)⁶	16 x 16 [25½] x 8	15 x 18 x 10	16 x 16 [27½] x 7 [18½]	18 x 18 [23½] x 5
Weight	35 lb	32 lb	44 lb	24 lb
Warranty	1 year, 90 days on-site	1 year	1 year	1 year
	Abaton 48431 Milmont Dr. Fremont, CA 94538 (800) 444-5321 (415) 683-2226	Apple Computer, Inc. 20525 Mariani Ave. Cupertino, CA 95014 (408) 996-1010	Fujitsu America, Inc. 3055 Orchard Dr. San Jose, CA 95134 (800) 626-4686 (408) 432-1300	GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777 (617) 890-0880

\*With third-party 4-megabyte SIMMs

¹DOS kit

⁵HP-emulation kit

⁶With tray



# "LISTEN, MAC, YA GOT THREE CHOICES..."



## High Resolution Solutions by LaserMAX

POSTSCRIPT® LANGUAGE  
& APPLE TALK™ NETWORK  
COMPATIBLE

FOR YOUR MAC II



### LaserMAX 1000 Personal Typesetter

The LaserMAX 1000 utilizes the same *revolutionary TurboRes™* technology to produce incredible 1000 x 1000 TurboRes™ output.

TurboRes™ resolution enhancement technology controls the position and height of the pixels on the printed page and eliminates coarse steps between pixels, otherwise known as *jaggies*. With output this sharp, you won't need to send out for expensive and time-consuming typeset output.

And, both the LaserMAX 1200 and the LaserMAX 1000 come standard with the LaserMAX 135 Typeface Classics—135 premium typefaces in Type 1 format.

### LaserMAX 400 Personal Printer

Who said quality doesn't come cheap? The LaserMAX 400 provides Macintosh users with 400 x 400 TurboRes™ output, 50 premium typefaces in Type 1 format and *still* sells for less than \$2,000. That's a bargain any way you look at it.

The LaserMAX 400 is a powerful PostScript-language compatible laser printer that works with many of your desktop publishing and graphics applications. The 4-page-per-minute printer is based on the same LBP-LX print engine that's used with other personal printers, including Apple's new Personal LaserWriter SC and NT and HP's LaserJet IIP.

### LaserMAX 1200 Personal Typesetter II

You knew it was only a matter of time before LaserMAX gave you more. With the introduction of the LaserMAX 1200, Macintosh users are given far more publishing power than ever: 1200 x 1200 TurboRes™ output in an 11 x 17-inch format.

At 1200 x 1200 TurboRes™ the LaserMAX 1200 provides you with text that's crisp and accurate—even delicate serifs are reproduced with amazing precision.

And the large format gives you the freedom to create two-page spreads and print the entire image as camera-ready art *without* having to shrink or tile. You can also place crop marks and bleeds, print CAD designs, newsletters and posters in an 11 x 17-inch format.

If you're looking for an extraordinary resolution solution, call LaserMAX today:  
(612) 944-9696, Dept. 249.

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-SYSTEMS™

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TEL: (612) 944-9696 FAX: (612) 944-9151



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## Table 1: Features of Personal PostScript Printers, continued

	GCC BLP IIS \$\$\$	Hewlett-Packard LaserJet IIP \$\$\$	NEC Silentwriter 2 Model 90 \$\$\$	Okidata OL840 \$\$\$
List price	\$2,899	\$3,025**	\$2,495	\$2,999
Street price	\$2,899	\$1,950	\$1,449	\$2,100
Comments	Fast engine. Impressive performance for slow processor. SCSI port.	Slowest printer. Small paper tray. High price.	Low sticker price. Fast.	Fast engine. Large package.
<b>Specifications</b>				
Printer type	PostScript	PostScript option, \$695	PostScript	PostScript
Engine, type	Okidata, LED	Canon, laser	Minolta, laser	Okidata, LED
Engine life (pages)	300,000/5 years	150,000	180,000	300,000/5 years
Monthly duty cycle (pages)	5,000	2,500	8,000	5,000
Microprocessor, clock speed	Motorola 68000, 16.7 MHz	Motorola 68000, 10 MHz	Motorola 68000, 16.7 MHz	Motorola 68000, 12 MHz
Pages per minute	8 ppm	4 ppm	6 ppm	8 ppm
RAM (standard, max.; upgrades)	2 MB, 4 MB; 2 MB, \$299	512K; 2 MB, \$560	2 MB, 4 MB; 2 MB, \$995	2 MB, 4 MB; 2 MB, \$590
Interfaces	serial, parallel, \$149; <sup>†</sup> SCSI, LocalTalk	serial, parallel; LocalTalk, \$275	serial, parallel, LocalTalk	serial, parallel, LocalTalk
Printer emulations	HP LaserJet II; Diablo 630, \$149 <sup>‡</sup>	HP LaserJet II	HP LaserJet IIP	Diablo 630, HP LaserJet II
<b>Software</b>				
No. of fonts in ROM, type	35, Adobe Type 1	35, Adobe Type 1	35, Adobe Type 1	35, Adobe Type 1
Support for Type 1 and 3 fonts	yes	yes	yes	yes
Bundled software	QuickEnvelope DA	special printer driver	support kit	none
<b>Paper handling</b>				
Paper output (image up, down)	up, down	up, down	down	up, down
Paper stock min./max. (pounds)	16/34 lb	16/28 lb	20/41 lb	16/34 lb
No. of trays, page capacity (each)	1, 200	1, 50	1, 250	1, 200
Paper sizes	letter, legal, A4, B5, Executive, Monarch, Com10, C5, DL	letter, legal, executive	letter, legal, A4, B5, Monarch, Com10, C5, DL	letter, legal, A4, B5, Executive, Monarch, Com10, C5, DL
Envelope tray (capacity; optional)	25 – 50; optional, \$89	20; optional, \$89	15	15; optional, \$89
<b>Other features/options</b>				
	silent sleep mode	250-sheet lower paper tray, \$195	face-up paper tray, \$139	second paper tray for dual bin, 200 sheets
<b>Replacement supplies</b>				
OPC (drum)/copies	\$289/15,000	\$95/3,500	\$240/8,000	\$289/15,000
Toner/copies	\$33/2,500	NA	NA	\$33/2,500
<b>Other</b>				
Dimensions (W x D x H, in.) <sup>§</sup>	18 x 18 [23 <sup>‡</sup> ] x 5	14 x 16 [25 <sup>‡</sup> ] x 8	18 x 15 [25 <sup>‡</sup> ] x 8	17 x 17 [23 <sup>‡</sup> ] x 8.5
Weight	24 lb	22 lb	44 lb	37 lb
Warranty	1 year	1 year	1 year/60,000 pages	1 year/LCD print head, 5 years
	GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777 (617) 890-0880	Hewlett-Packard 19310 Pruneridge Ave. Cupertino, CA 95014 (800) 752-0900 (415) 857-1501	NEC Technologies 1414 Massachusetts Ave. Boxborough, MA 01719 (508) 264-8000	Okidata 532 Fellowship Rd. Mount Laurel, NJ 08054 (609) 235-2600

<sup>†</sup>DOS kit

<sup>‡</sup>HP-emulation kit

<sup>§</sup>With tray

\*\* Tested with optional 2 MB of RAM, PostScript, and LocalTalk (base non-PostScript price is \$1,495)



Adobe Type Manager™ is a trademark and PostScript® is a registered trademark of Adobe Systems Incorporated.



**Introducing the Kodak Diconix M150 plus printer. It travels with any portable or desktop Mac computer, so you can print anytime, anywhere.**

Just think of all the things you can do if you carry a Diconix printer with your Macintosh computer. Those last-minute improvements on the presentation. The letters and reports that could be on their way right now. And, because it's so small and quiet, it works as well on the desktop as it does on the road.

It's all easy with the new Kodak Diconix M150 plus printer. It's easy to carry (3.1 lbs.), prints PostScript®-quality outline fonts using Adobe Type Manager™ software, as well as presentation graphics. No printer in the world is quieter, smaller or lighter. Go ahead, give in to temptation, call for the name of your nearest dealer in the U.S. or Canada:

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Macintosh computer and new Kodak Diconix printer

# WHAT'S ONE WITHOUT THE OTHER? KODAK

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Please circle 168 on reader service card.



Table 1: Features of Personal PostScript Printers

	QMS PS-410 \$\$\$\$½	Texas Instruments microLaser PS35 \$\$\$\$
List price	\$2,795	\$2,849
Street price	\$1,950	\$1,790
Comments	Fastest printer. Automatic Mac and PC network capability.	Compact design in an easy-to-use package. Smallest footprint.
Specifications		
Printer type	PostScript	PostScript
Engine, type	Canon, laser	Sharp, laser
Engine life (pages)	360,000	200,000
Monthly duty cycle (pages)	2,500	3,000
Microprocessor, clock speed	Motorola 68020, 16.6 MHz	Motorola 68000, 12.5 MHz
Pages per minute	4 ppm	6 ppm
RAM (standard, max.; upgrades)	2 MB, 6 MB; 1 MB, \$480; 2 MB, \$780; 4 MB, \$1,280	1.5 MB, 4.5 MB; 1 MB, \$345
Interfaces	serial, parallel, LocalTalk	serial, parallel, LocalTalk
Printer emulations	HP LaserJet II; HPGL, \$295	HP LaserJet II
Software		
No. of fonts in ROM, type	45, Adobe Type 1	35, Adobe Type 1
Support for Type 1 and 3 fonts	yes	yes
Bundled software	Executive series utilities	none
Paper handling		
Paper output (image up, down)	up, down	up, down
Paper stock min./max. (pounds)	16/28 lb	16/24 lb
No. of trays, page capacity (each)	1, 50	1, 250
Paper sizes	letter, legal, A4, B5, Executive	letter, legal, A4, B5, Executive
Envelope tray (capacity; optional)	20; optional, \$89	40; optional, \$395
Other features/options	emulation switching, concurrently active ports, 250-sheet lower tray, \$199	none
Replacement supplies		
OPC (drum)/copies	\$95/3,500	\$160/40,000
Toner/copies	NA	\$60/3,000 \$130 (developer)/25,000
Other		
Dimensions (W x D x H, in.) <sup>o</sup>	13.5 x 16 [25 <sup>o</sup> ] x 7.5	13 x 14 x 11
Weight	26 lb	33.5 lb
Warranty	1 year	1 year
	QMS, Inc. 1 Magnum Pass Mobile, AL 36618 (800) 631-2692 (205) 633-4300	Texas Instruments, Inc. P.O. Box 202230 Austin, TX 78720 (800) 527-3500

<sup>o</sup>With tray

## Criteria

**List price** — The manufacturer's suggested retail price.

**Street price** — The lowest actual price our researchers could find in a survey of dealers around the U.S. in November 1990.

**Printer type** — The type of RIP (raster-image processor) used in the printer.

**Engine, type** — The type of engine used in the printer by maker and by type of marking technology — laser or LED.

**Engine life (pages)** — The manufacturer's rating of the engine life in total pages.

**Monthly duty cycle (pages)** — If you're doing high-volume printing, this number is significant, because it affects how many pages you print in a day.

**Microprocessor, clock speed** — The faster and more powerful the processor, the faster the printer processes and prints your page.

**Pages per minute** — How many pages the engine can print per minute after the RIP has prepared a page for printing.

**RAM (standard, max.; upgrades)** — The amount of on-board memory the printer ships with and optional upgrades.

**Interfaces** — Some manufacturers add interfaces besides LocalTalk to connect with PCs. Some also offer SCSI for attaching a hard-disk drive.

**Printer emulations** — Some manufacturers provide popular PC printer languages for PC users.

**No. of fonts in ROM, type** — The number and the type of font outlines in the printer's ROM.

**Support for Type 1 and 3 fonts** — Adobe Type 1 font support may be important for compatibility with established font libraries.

**Bundled software** — Some printers come bundled with simple word-processing software or with custom drivers that take advantage of a printer's special features.

**Paper output (image up, down)** — The ability to have prints come out of the printer with the image side up or down.

**Paper stock min./max. (pounds)** — The lower and upper limit for the weight of paper usable in the printer.

**No. of trays, page capacity (each)** — A large paper tray is convenient for high-volume printing.

**Paper sizes** — Most printers can handle the popular sizes, whereas others can print close to the edge and offer other sizes.

**Envelope tray (capacity, optional)** — Some printers can handle envelopes without the use of special optional paper trays, whereas others require a separate tray for more than a single manually fed envelope.

**OPC (drum)/copies** — Canon and Minolta engines use a single cartridge that combines the drum with the toner. Others use a separate drum.

**Toner/copies** — Separate toner units need to be replaced more frequently than OPC drum units.

**Dimensions (W x D x H, in.)** — The dimensions of the printer, including paper trays.

**Weight** — The weight of the printer in pounds.



# Most Printers are Macintosh® Compatible! Is Yours?

Model	Type	Grappler	Notes
<b>Alps</b>			
ALQ200 Series	24 Pin	Grappler LX	6
ALQ300 Series	24 Pin	Grappler LX	6
Allegro	24 Pin	Grappler LX	6
ASP 1000	9 Pin	Grappler 9 Pin	1
P2000+	18 Pin	Grappler 9 Pin	1
P2100	18 Pin	Grappler 9 Pin	1
P2400	18 Pin	Grappler 9 Pin	6
<b>AT&amp;T</b>			
AT&T 450	Daisywheel	None	
470, 476	9 Pin	Grappler 9 Pin	5
478, 479	9 Pin	Grappler 9 Pin	5
570, 571	9 Pin	Grappler 9 Pin	1
495	Laser	Grappler LX/LS	9
<b>Blaser</b>			
Star 2	Laser	Grappler LX/LS	9
<b>Brother</b>			
1109	9 Pin	Grappler 9 Pin	2,11
1209, 1509	9 Pin	Grappler 9 Pin	1
1709	9 Pin	Grappler 9 Pin	1
M-1909, M-1809	9 Pin	Grappler 9 Pin	1
1724	24 Pin	Grappler LX	6
HL-8	Laser	Grappler LX	9
HR Series	Daisywheel	None	
M-2518	18 Pin	Grappler 9 Pin	1
M-4018	18 Pin	Grappler 9 Pin	1
TwinWriter	9 Pin	Grappler 9 Pin	1
<b>CIE America</b>			
LiteWrite	9 Pin	Grappler 9 Pin	1
<b>Centronics</b>			
PS210	9 Pin	Grappler 9 Pin	1
PS220	9 Pin	Grappler 9 Pin	1
<b>C. Itoh</b>			
1550S+NLQ	9 Pin	None	
C-210	9 Pin	Grappler 9 Pin	1
C-215	9 Pin	Grappler 9 Pin	1
C-310	9 Pin	Grappler 9 Pin	1
C-315	9 Pin	Grappler 9 Pin	1
C-715	24 Pin	Grappler LX	7
C-815	24 Pin	Grappler LX	8
CI-2500	9 Pin	Grappler 9 Pin	5
CI-4000	9 Pin	Grappler 9 Pin	1
D10-40	Daisywheel	None	
F10-55	Daisywheel	None	
Jet-Setter	Laser	Grappler LX/LS	9
Lips 10+	Laser	Grappler LX/LS	9
ProWtr Jr.+	9 Pin	Grappler 9 Pin	1
8510	9 Pin	Grappler 9 Pin	1
<b>Citizen</b>			
120-D, 180-D	9 Pin	Grappler 9 Pin	4
124, 224	24 Pin	Grappler LX	7
GSX-140	24 Pin	Grappler LX	7
MSP-10	9 Pin	Grappler 9 Pin	1
MSP-15E	9 Pin	Grappler 9 Pin	1
MSP-50	9 Pin	Grappler 9 Pin	1
<b>Data Products</b>			
9030, 9040	9 Pin	Grappler 9 Pin	1
9034, 9044	24 Pin	Grappler LX	6
<b>DCS/Fontis</b>			
DM-2215	9 Pin	Grappler 9 Pin	1
DM-2215	9 Pin	Grappler 9 Pin	1
DM-1310	9 Pin	Grappler 9 Pin	1
<b>Diconix</b>			
150	12 Pin	None	
300W	9 Pin	Grappler 9 Pin	1
<b>Epson</b>			
EX Series	9 Pin	Grappler 9 Pin	1
FX-80, FX-80+	9 Pin	Grappler 9 Pin	1
FX-85	9 Pin	Grappler 9 Pin	1
FX-86E	9 Pin	Grappler 9 Pin	3,11
FX-100, FX-100+	9 Pin	Grappler 9 Pin	1
DFX-5000	9 Pin	Grappler 9 Pin	1
DFX-8000	9 Pin	Grappler 9 Pin	1
FX-185	9 Pin	Grappler 9 Pin	3,11
FX-286	9 Pin	Grappler 9 Pin	3,11
FX-286E	9 Pin	Grappler 9 Pin	3,11
JX Series	9 Pin	Grappler 9 Pin	1
GQ3500	Laser	Grappler LX/LS	9
LQ500	24 Pin	Grappler LX	
LQ510	24 Pin	Grappler LX	
LQ800	24 Pin	Grappler LX	
LQ850	24 Pin	Grappler LX	
LQ1000	24 Pin	Grappler LX	
LQ1050	24 Pin	Grappler LX	
LQ2400	24 Pin	Grappler LX	
LQ2500	24 Pin	Grappler LX	
LX800	9 Pin	Grappler 9 Pin	11
MX80	9 Pin	Grappler 9 Pin	11

Model	Type	Grappler	Notes
<b>Facit</b>			
4509	9 Pin	Grappler 9 Pin	3,11
4510	9 Pin	Grappler 9 Pin	1
4511	9 Pin	Grappler 9 Pin	1
4513	9 Pin	Grappler 9 Pin	1
4514	9 Pin	Grappler 9 Pin	1
B1100	9 Pin	Grappler 9 Pin	1
B3100	9 Pin	Grappler 9 Pin	1
B3150	9 Pin	Grappler 9 Pin	1
B3450	24 Pin	Grappler LX	6
C5500	9 Pin	Grappler 9 Pin	1
C6510	9 Pin	Grappler 9 Pin	1
C6520	9 Pin	Grappler 9 Pin	1
C7400	9 Pin	Grappler 9 Pin	1
C7500	9 Pin	Grappler 9 Pin	1
P7080A	Laser	Grappler LX/LS	9
<b>Fujitsu</b>			
DL2400	9 Pin	Grappler 9 Pin	
DL2600	24 Pin	None	
DL3000 Series	24 Pin	None	
DL4400	24 Pin	Grappler LX	6
DL5600	24 Pin	None	
DX2100	9 Pin	Grappler 9 Pin	1
DX2200	9 Pin	Grappler 9 Pin	1
DX2300	9 Pin	Grappler 9 Pin	1
DX2400	9 Pin	Grappler 9 Pin	1
RX7300	Laser	Grappler LX/LS	9
<b>Genicom</b>			
1025	9 Pin	Grappler 9 Pin	1
5010	Laser	Grappler LX/LS	9
<b>Hewlett Packard</b>			
DeskJet	Inkjet	Grappler LX/LS	
DeskJet Plus	Inkjet	Grappler LX/LS	
DeskJet 500	Inkjet	Grappler LX/LS	
LaserJet	Laser	None	
LaserJet II, IIP	Laser	Grappler LX/LS	
LaserJet III	Laser	Grappler LX/LS	
PaintJet	Inkjet	None	
ThinkJet	Inkjet	None	
<b>IBM</b>			
ProPrinter	9 Pin	Grappler 9 Pin	
QuietWriter		None	
<b>Kyocera</b>			
F-1000A	Laser	Grappler LX/LS	9
F-1010	Laser	Grappler LX/LS	9
F-2010	Laser	Grappler LX/LS	9
F-3010	Laser	Grappler LX/LS	9
<b>Laser Computer</b>			
190E, 190A	9 Pin	Grappler 9 Pin	1
<b>Mannesman Tally</b>			
MT81, MT85	9 Pin	Grappler 9 Pin	1
MT86, MT87	9 Pin	Grappler 9 Pin	1
MT88	9 Pin	Grappler 9 Pin	1
MT130/9	9 Pin	Grappler 9 Pin	1
MT131/9	9 Pin	Grappler 9 Pin	1
MT230/9	9 Pin	Grappler 9 Pin	1
MT330	24 Pin	Grappler LX	6
MT290, MT460	9 Pin	Grappler 9 Pin	1
MT910	Laser	Grappler LX/LS	9
MT-SP80	9 Pin	Grappler 9 Pin	
<b>Nisshe</b>			
NP2410	24 Pin	Grappler LX	6
<b>NEC</b>			
LC860	Laser	Grappler LX	9
P5XL	24 Pin	Grappler LX	6
P6	24 Pin	Grappler LX	6
P7	24 Pin	Grappler LX	6
P9XL	24 Pin	Grappler LX	6
P2200	24 Pin	Grappler LX	6
P5200	24 Pin	Grappler LX	6
P5300	24 Pin	Grappler LX	6
PC8023-A	9 Pin	Grappler 9 Pin	
<b>Okidata</b>			
80 & 90 Series	9 Pin	None	
2410 Series	9 Pin	None	
Microline 320, 3219 Pin		Grappler 9 Pin	1
ML-180	9 Pin	None	
ML-192	9 Pin	Grappler 9 Pin	
ML-192+	9 Pin	Grappler 9 Pin	
ML-193+	9 Pin	Grappler 9 Pin	
ML-292	9 Pin	Grappler 9 Pin	
ML-293	9 Pin	Grappler 9 Pin	
Laserline 6	Laser	None	
400 & 800	Laser	Grappler LX/LS	
240	24 Pin	Grappler LX	
ML-393+	24 Pin	Grappler LX	6
<b>Olivetti Office USA</b>			
DM 1005	9 Pin	Grappler 9 Pin	1

Model	Type	Grappler	Notes
<b>Olympia</b>			
LaserStar6	Laser	Grappler LX/LS	9
NP30	9 Pin	None	1
NP80S, NP136S	9 Pin	Grappler 9 Pin	1
<b>PCPI</b>			
Lsrim 1000	Laser	Grappler LX/LS	9
2000, 3000	Laser	Grappler LX/LS	9
<b>Panasonic</b>			
1080i, 1091i	9 Pin	Grappler 9 Pin	3,11
1090	9 Pin	Grappler 9 Pin	4,11
1092i	9 Pin	Grappler 9 Pin	1
1124, 1524	24 Pin	Grappler LX	6,11,13
1592, 1595, 1695	9 Pin	Grappler 9 Pin	1
4420	Laser	Grappler LX	
4450, 4455	Laser	Grappler LX/LS	9
<b>Printek</b>			
930/dlx	9 Pin	Grappler 9 Pin	1
2000TX, 2000CX	9 Pin	Grappler 9 Pin	1
<b>Ricoh</b>			
PC6000	Laser	Grappler LX/LS	
<b>Seikosha</b>			
BP-5420	9 Pin	Grappler 9 Pin	1
MP-1300AI	9 Pin	None	
SK 3000AI	9 Pin	Grappler 9 Pin	1
SK 3005AI	9 Pin	Grappler 9 Pin	1
SK 3500+	9 Pin	Grappler 9 Pin	1
SL-80AI	24 Pin	Grappler LX	6
SL-130AI	24 Pin	Grappler LX	6
SP 180, 185AI	9 Pin	Grappler 9 Pin	1
SP 1200, 2000+	9 Pin	Grappler 9 Pin	1
SP 1000AP	9 Pin	Grappler 9 Pin	1
<b>Sharp</b>			
JX-720		None	
JX-9300	Laser	Grappler LX/LS	9
<b>Star Micronics</b>			
Gemini 10X	9 Pin	Grappler 9 Pin	
NB-15, NB25-10	24 Pin	Grappler LX	6
NB24-15	24 Pin	Grappler LX	6
NP-10	9 Pin	Grappler 9 Pin	
NX-15	9 Pin	Grappler 9 Pin	
NX-10, -100	9 Pin	Grappler 9 Pin	1
NX-1000, -1020	9 Pin	Grappler 9 Pin	1
NX-1500	9 Pin	Grappler 9 Pin	1
NX2400	24 Pin	Grappler LX	6
SD10	9 Pin	Grappler 9 Pin	
SG & SR	9 Pin	Grappler 9 Pin	
<b>Toshiba</b>			
P321, P321SL	24 Pin	Grappler LX	12,13
P351C, P351SX	24 Pin	Grappler LX	13
PqLsr 12	Laser	Grappler LX/LS	9

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#### Notice:

This chart represents the best current information, based on testing and data supplied by the printer manufacturers. Printers listed as compatible may still exhibit variations in multiple page alignment, slower print speeds and other minor limitations. Laser printers require a minimum of 1MB of printer RAM. Mac512 works with 9 Pin ONLY + adapter cable.

#### Key to Notes:

1. Epson EX, FX, JX series emulation
2. Epson LX series emulation
3. Epson RX series emulation
4. Epson MX series emulation
5. IBM ProPrinter emulation
6. Epson LQ series emulation
7. Plug in cards emulate LQ-1000
8. Toshiba P351 emulation
9. HP LaserJet Plus emulation
10. HP compatibility option req'd
11. No reverse line feed
12. Parallel extension needed
13. Slow Printing



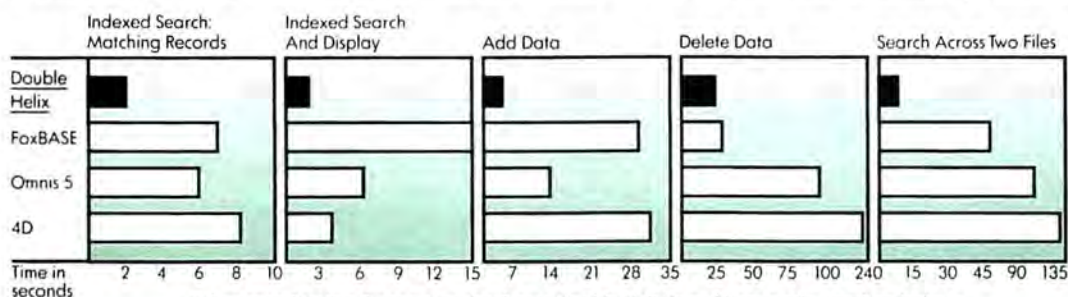
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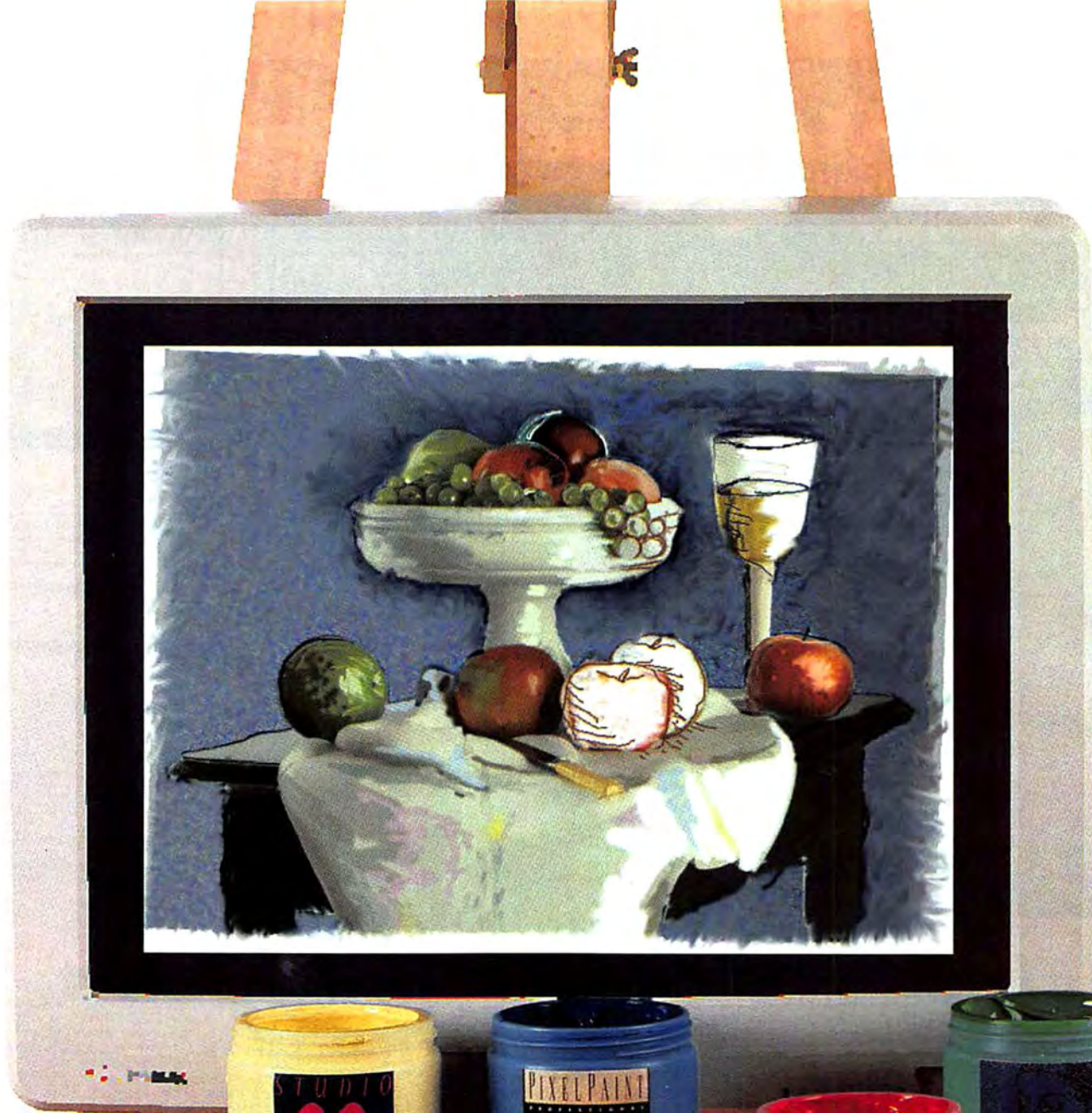
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# PAINTING PROGRAMS: THE FINE ART OF 32-Bit Color

*Fulfill your most colorful fantasies! These four power painting programs give you creative control over 16,777,216 colors.*



il painters no longer need endure dizzying turpentine fumes. Airbrush artists can now avoid acrylic smog. The Mac has become a tool for serious artists. And as the Mac reduces air pollution, it also increases artists' control over the creative process. Painters can now reproduce, on-screen, millions of colors with perfect precision — no more mixing blobs, dabs, dollops, drops, smidgens, tidbits, or any other arcane unit of measure borrowed from the world of haute cuisine. With a full-color-capable Mac and a 32-bit painting program, artists can control a virtually unlimited supply of colors — electronic dollops and splats that add up to nearly 16.8 million colors.

Commercial artists, illustrators, and fine artists have discovered the control and power of 32-bit painting programs. And as full-color Mac hardware becomes more popular, the power of 32-bit painting is now beginning to move out of the wholly professional field and onto desktops everywhere. The Mac's forgiving nature is fueling this rapid advance. If you don't like the color you've applied, you can simply undo it — and try millions of others. You can match a color from one area of your artwork for use in another just by clicking on it. And when it's time to reproduce your art on a printing press, a 32-bit painting program can help you generate the necessary color separations. Or better yet, you can place your artwork in a page layout and take the film output from your service bureau directly to your printer (see "Color: Techniques & Technologies," May '90, page 199).

**BY DARRYL LEWIS, KELLI WISETH,  
AND THE MACUSER LABS STAFF**

PHOTOGRAPHY: FRED STIMSON



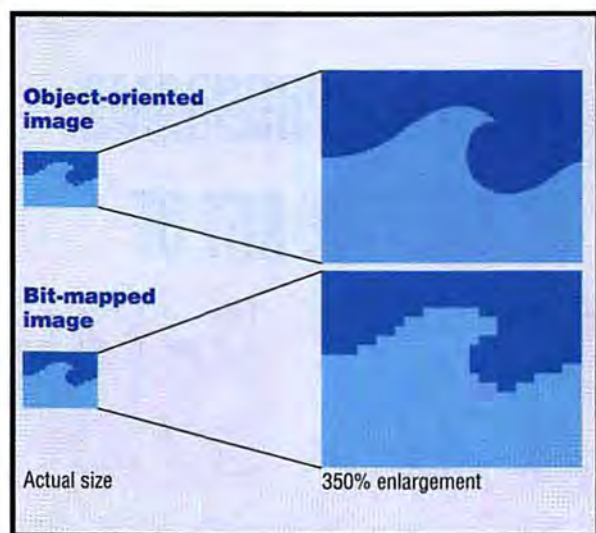


Figure 1: In an object-oriented drawing program, a shape is a complete entity. Its outline, or *path*, is mathematically defined. A shape's path has a specified thickness and color, and it can be filled with a selected color. You need only click and drag to move it. In a painting program, a shape comprises individual pixels. You can edit the color of each pixel individually, but if you want to move the shape, you must surround all the dots that comprise it with a selection tool such as the lasso or marquee.

Mathematically inclined readers may notice that 32 bits can produce 4,294,967,296 colors — not the mere 16,777,216 we've mentioned. Don't worry — you're not being shortchanged by a few billion: The 16.8 million colors of a 32-bit painting program are produced by only 24 bits of the 32-bit *long word* that's the basis of Apple's 32-bit QuickDraw screen-description scheme. The 8 extra bits are reserved for the *alpha channel* — as yet undefined by Apple but used by some third-party developers for a variety of purposes. (RasterOps, for example, uses the alpha channel to combine video images with Mac graphics in its SFX video mixer.) However, 16.8 million colors should be enough for even the most exacting photo-realistic images. In fact, if you start defining one color per minute right now and continue day and night, you'll reach color number 16,777,216 in mid-March 2023.

### Colorful Contenders

To help you decide which 32-bit painting program is best for you — or if you need to move up to 32-bit painting at all — we took a close look at four full-color painting programs: Delta Tao's Color MacCheese 1.05, Electronic Arts' Studio/32 1.0, SuperMac's PixelPaint Professional 1.0, and Zedcor's DeskPaint 3.03. Color MacCheese is also distributed by Baseline Publishing, of Memphis. (By the time you read this, SuperMac should be shipping PixelPaint

## Photo-Retouching Software

Photo-retouching programs, such as Adobe Photoshop and Letraset's ColorStudio, provide many of the same functions as color painting programs, but they also include features expressly designed for manipulating scanned images. Painting as well as retouching programs work with bit-mapped images and share some tools — the paintbrush, eyedropper, pencil, and blending finger, for example. But a retouching program lets you separate an image into its various color components, or *channels*, for modification and enhancement. Depending on the color model you're working in, the number of channels that comprise the image varies. In Photoshop, for example, a black-and-white bit map consists of one channel whereas an RGB (red, green, blue) image has three channels, one each for red, green, and blue. You can work with each channel separately, adjusting color in one channel without affecting the colors in the others, or you can edit the composite image.

Retouching programs also let you correct the color of an image through *remapping*, or changing the current color values of

pixels to different color values. The *color-map* curve starts as a straight line, showing a 1:1 relationship between input and output colors (see Figure A). You can, for example, decrease the red in an image by adjusting the curve. ColorStudio's Color Correction window lets you change the relative amounts of color or brightness in all or a selected part of an image. Photoshop has a similar function.

A photo-retouching program also lets you adjust the brightness, contrast, and overall color blend of an image. In addition, both Photoshop and ColorStudio provide more than a dozen special-effects filters similar to those professional photographers use. You can, for example, blur, sharpen, posterize, simulate motion, trace the edges where colors meet, or outline the contours of an image's curves.

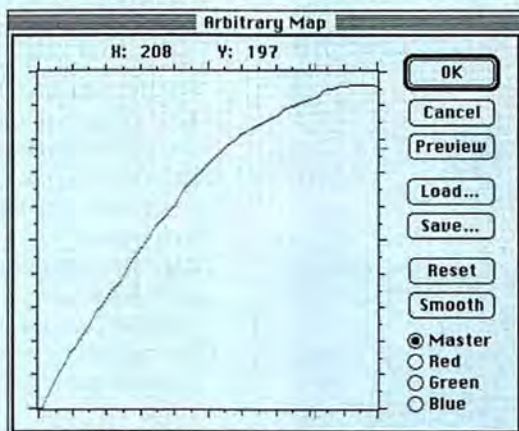


Figure A: In Photoshop, you can *remap*, or change, the color of pixels in an image by changing the curve in the Arbitrary Map dialog box. The original color values are shown along the x axis, and the new color values are shown along the y axis.

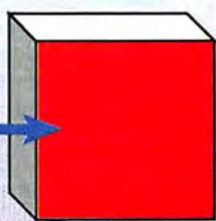


**Figure 2: 8-Bit Versus 32-Bit Color**

### 8-bit paint

CLUT			
Index	R	G	B
0	0	0	0
1			
2			
3			
⋮			
201	225	20	25
⋮			
253			
254			
255	255	255	255

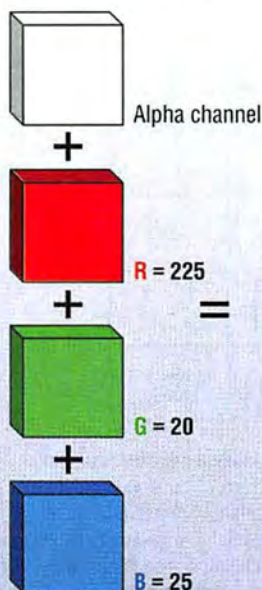
The 256 color possibilities for any 8-bit paint document are stored in a CLUT (color-lookup table) at the beginning of the file. Each entry in a CLUT contains four components: an index number and corresponding red, green, and blue values. If a color isn't in the current palette, Color Quick-Draw returns the index number of the closest available color.



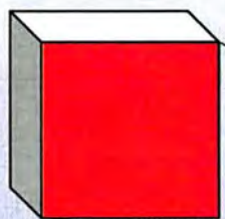
One of 256 colors



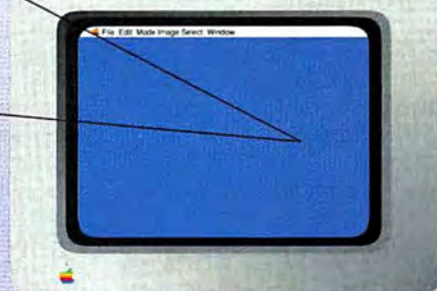
### 32-bit paint



A 32-bit paint document stores color values directly in the file as three 8-bit numbers and an 8-bit alpha channel. Only 24 bits are needed to produce up to 16.8 million colors. Displaying 16.8 million colors requires three times the processing power as 8-bit, however, so you pay for the higher quality of 32-bit paint with slower speed and larger files.



One of 16,777,216 colors





Professional 2.0; see the "On the Horizon" sidebar.)

Low-priced Color MacCheese and DeskPaint provide fewer features than do professional-level PixelPaint Professional and Studio/32, but if you're a beginning Mac painter (or are on a limited budget), you'll find them to be excellent introductions to the world of 32-bit painting — and they may be all the painting power you'll ever need. All four 32-bit painting programs provide the seemingly limitless palette of 16.8 million colors, but some give you better tools for managing and applying those colors. As a desk accessory, DeskPaint has the advantage of being always available on the Apple menu — you can, for example, quickly edit an image while still working in your page-layout program.

Although all four programs can display an equal number of colors, only three provide the high *output resolutions* that are important when you print to high-resolution devices such as quality color printers or professional Linotronic



Figure 3: A 32-bit paint program has constant access to all 16.8 million colors and so can create a smooth *gradient* between any two colors. (A gradient blend is the transition of shades from one color to the next.) An 8-bit program, on the other hand, has only 256 colors to draw on and so must use other techniques — such as dithering — to simulate color transitions. The 8-bit dithered version of the blend (left) is not nearly as smooth as the 32-bit version.

## Object-Oriented Drawing Programs

Whereas painting programs treat a computer image as a collection of colored pixels, object-oriented drawing programs — such as MacDraw II, FreeHand 2.0, and Illustrator 3.0 — rely on mathematical descriptions to create images. Each object, or element, drawn in an object-oriented program is a complete unit. You don't need a lasso or marquee tool to surround pixels — just click on the object, and it's all yours.

You create objects by using basic shape or free-form tools (see Figure B). When you draw a line, you create a *path*; if you make a circle, a square, or a rectangle, you make a *closed path*. The tools provided in an object-oriented drawing program split and join paths or add points to an existing path. Object-oriented drawing programs also provide transformation tools for rotating, creating a mirror image of, scaling, or skewing elements — you won't find such tools in a painting program.

Adding color to an object-oriented drawing also happens along a path or within a closed path; you must first select the object (the path) and then apply the paint to it, usually by means of a menu selection — you won't find a paintbrush in an object-oriented program.

An exception to this rule is Deneba's Canvas 2.0, something of a hybrid that combines basic painting tools with extensive drawing capabilities. You can use both sets of tools to create your image. Nonetheless, you can use only the appropriate tools — bit-mapped or object-oriented — to work

with the parts of the image thus created. And Canvas doesn't provide advanced painting functions such as masking.

Because object-oriented art is managed by mathematical description, you can enlarge and reduce it without its becoming jagged. When you enlarge or reduce a bit map, you must take into consideration the printer's resolution and make sure that you enlarge or reduce only by percentages that are evenly divisible by the bit-map resolution of 72 dpi — otherwise your artwork looks chunky. Object-oriented art maintains smoothness regardless of output size.

On the other hand, object-oriented programs provide no way to create fine detail in a picture by editing the color of individual pixels. Although you can work with special gradients and fills, fill colors and patterns are generally limited to solids and regular patterns. There's no direct way to create irregular fills, color mixes, or complex shading effects.

Object-oriented and bit-mapped programs provide completely different ways of working with images — your choice depends on the job at hand. When typography is part of the artwork or if you're designing a logo that combines text with irregular shapes filled with solid colors or regular patterns, you'll want to use an object-oriented drawing program such as Illustrator or FreeHand. On the other hand, if you're creating a complex illustration painted with subtle gradations of color, a bit-mapped painting program is the way to go.

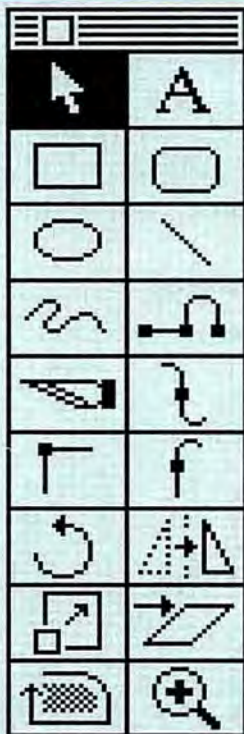


Figure B: Unlike a painting program, with its toolbox of brushes and buckets, an object-oriented drawing program, such as FreeHand, provides tools for working with paths. You can rotate, alter the size, or distort the perspective of an object simply by selecting it and using a rotation, scaling, or skewing tool.





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imagesetters. Color MacCheese has the lowest output resolution — it tops out at the Mac's screen resolution: 72 dpi. If you want quality output — especially if you intend to produce color separations — you'll want a higher-resolution image. DeskPaint, PixelPaint Professional, and Studio/32 images can be printed on 300-dpi printers or 2,540-dpi imagesetters such as the Linotronic 300.

Before you rush out to pick up one of these 32-bit painting programs, remember that not every color Mac can display the full 16.8 million colors — you need a 24- or 32-bit video card. (The built-in 8-bit-color video of the LC, IIsi, and IIfx can display only 256 colors.) You'll also need to install 32-bit QuickDraw, from your Apple System Tools disk, in your System Folder; this addition to the QuickDraw library is in ROM in the Mac IIfx, IIsi, LC, and IIfx. And remember that 32-bit color taxes your Mac's power — you'll want to use the fastest CPU available to you. You may even consider adding a QuickDraw-accelerator card to supply the extra power needed for fast 32-bit screen updates (see "QuickDraw Accelerators," May '90, Buyer's Guide, page 40).

### A 32-Bit Mosaic

How are painting programs different from image-manipulation programs such as photo-retouching or object-oriented applications? When using a painting program, you manipulate a mosaic of electronic dots — pixels — on an electronic canvas to create an artwork that is a *bit map*, or pixel-by-pixel screen description. Photo-retouching programs, such as Adobe Photoshop, also work with bit-mapped images. Painting and photo-retouching programs have other capabilities in common, such as the ability to airbrush an area with paint. But a photo-retouching program, with its control over color balance and *output channels*, is better suited for enhancing scanned photographs, whereas a painting program is better suited for creating original art (see the "Photo-Retouching Software" sidebar). Nonetheless, both types of programs treat an image as a collection of individual pixels.

An *object-oriented* drawing program, on the other hand, uses mathematical descriptions to draw objects on your screen. You can resize, reposition, and manipulate an object at will, long after you've placed it on your electronic canvas (see the "Object-Oriented Drawing Programs" sidebar). With a painting program, on the other hand, once you've released your circle or square on the computer canvas, the shape becomes part of the mosaic (see Figure 1) and you can no longer resize or move it as a separate object.

Each method — bit-mapped and object-oriented — has distinct advantages and disadvantages. A painting program, for example, is far superior for manipulating fine distinctions of color at the pixel level. The higher up the Mac's evolutionary ladder you go, the more noticeable is this superiority. On a black-and-white Mac, subtleties are few: Because each pixel can be only on or off, your pixel-color choices are simple — black or white. The Mac II

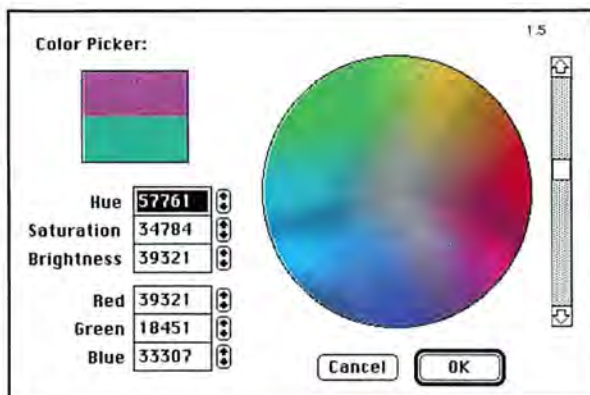


Figure 4: The Apple Color Picker lets you select a color simply by clicking within the color wheel. The RGB (red, green, and blue) levels between 0 (black) and 65,535 (full brightness) for each color appear in the specification boxes as you drag the cursor around on the wheel.



Figure 5a: The PixelPaint Professional color mixer is centered in the pop-down Color palette, which you can open by clicking on the gray bar immediately below the title bar of your artwork. You can use any of the tools from the Tool palette to mix colors in the color mixer. For example, you can use the brush tool to blob a few different colors into the color mixer and then use the finger tool to blend the colors.



Figure 5b: The Studio/32 color mixer is a separate tear-off window that you can place anywhere on your screen. Unlike with the PixelPaint Professional color mixer, you don't need a finger tool for blending paints — the blending occurs as you rub the paintbrush with one color into the area already filled with another color. In both Studio/32 and PixelPaint Professional, you can simply click on the color with the eyedropper tool to place it on the palette.

introduced Color QuickDraw, an extended version of the QuickDraw library that controlled color with a CLUT (color-lookup table); a Mac II could simultaneously display up to 256 colors from a choice of 16.8 million. The Mac IIfx introduced 32-bit QuickDraw, which added *direct color* — no more CLUT — and when used with the appropriate hardware, it could display the complete 16.8 million colors (see Figure 2).



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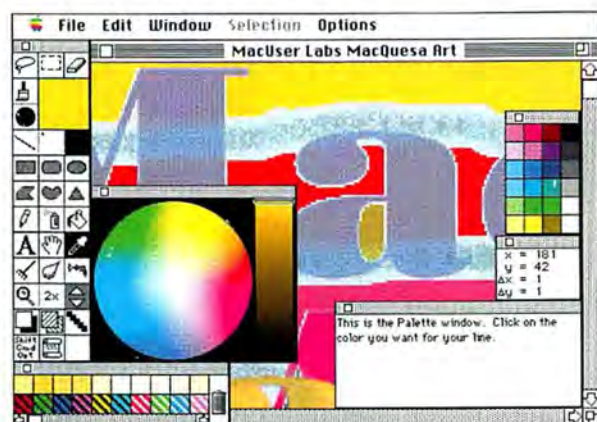


Figure 6: The Color MacCheese work space provides a Paint palette, Pattern palette, color wheel, Help window, Tool palette, and Coordinates window; each of these six windows can be put anywhere on your screen. The Paint palette is filled with 24 colors you cannot change, but the miniature Color Picker wheel is always available for accessing colors. The Help window gives information about whatever tool or window you aim at with the pointer. MacCheese lacks rulers, but the Coordinates window provides some precision.

### Eight Is Enough

What's the difference between a 32-bit and an 8-bit painting program? Graphic designers who use the Mac to create simple color logos or who add spot color to publications may not need the advanced capabilities of 32-bit color. If you create business graphics, 8-bit color is probably

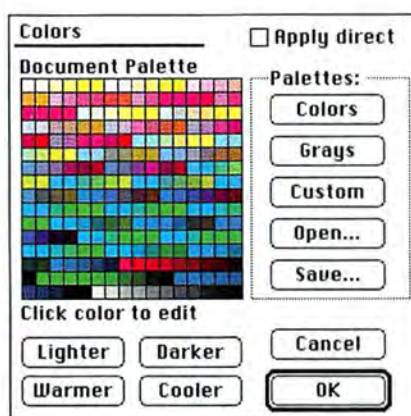


Figure 7: The DeskPaint Colors dialog box lets you lighten (add white), darken (subtract white), warm (add yellow), or cool (add blue) colors in the current palette. You can also replace any 254 colors in the palette — black and white must always remain in the palette in order to display menu bars and windows. Double-clicking on a single color square in the palette displays the Apple Color Picker; clicking on a new color on the color wheel replaces the color in this square.

plenty. After all, the Mac's 16.8 million colors are still available in 8-bit color—you're just limited to 256 of them at a time for a given image.

Nonetheless, computer artists working in 8-bit color may find that 256 colors are not sufficient to portray the subtle color gradations needed for realistic highlights and

## On the Horizon

Even as we were up to our elbows in 32-bit paint, several vendors were putting the final touches on upgrades and new packages to ship during the first quarter of 1991. Expect other well-known packages, such as Deneba's UltraPaint, to enjoy 32-bit upgrades soon.

SuperMac's long-awaited PixelPaint Professional 2.0 (\$799) should be shipping by the time you read this. The late-beta version we saw just before press time was very impressive. This isn't just a simple upgrade — it's a complete rewrite of the program. SuperMac's done away with PixelPaint's menu-intensive, nonintuitive interface and put most of the functionality where it belongs — in floating palette windows that stay on-screen while you work. PixelPaint Professional 2.0 also has a host of new features and capabilities, such as the ability to create a masking tool from any brush, tool, or image; a Wet Paint feature that lets you reposition and edit any shape

or text before merging it with the rest of the bit map; and a gradient editor that lets you create precise color ramps with multiple adjustable anchor points.

PixelPaint Professional 2.0 will also bring you PixelPaper, a feature that is best described by an explanation of how it works: When you paint on your electronic canvas, the "texture" of the paper shows through, just as it would if you were working with real canvas. In addition to canvas, PixelPaper can also simulate charcoal paper, concrete, linen, and slate. And you can scan your own surface textures to work with.

The new version has improved document control, including a ruler, a grid, a coordinate system, and a large cross hair plus 16 levels of zoom for better control and accuracy. Although PixelPaint Professional 2.0 has been a long time in the making, if it works as well as claimed, its innovative new features and greatly improved interface should more than make up for the wait.

SuperMac Technology, 485 Potrero Avenue, Sunnyvale, CA 94086; (408) 245-2202.

Olduvai plans to introduce a 32-bit version of VideoPaint for less than \$700. VideoPaint Pro, or VideoPaint 32 (the name was still undecided at press time), will feature a fully customizable tool palette and effects. Olduvai Corp., 7520 Red Road, Suite A, South Miami, FL 33143; (800) 822-0772 or (305) 665-4665.

If you want a powerful 32-bit painting program but don't have a high-powered budget, MicroFrontier's upcoming ColorIt 1.0 (\$119.95) may be your answer. ColorIt has many features usually found in higher-priced programs, such as a virtual-memory-management system that will let you open as many images in ColorIt as you like — the only limit is the amount of free space on your hard disk. MicroFrontier says its virtual system will support very large images even in low-memory conditions. You will



Figure 8: The four color palettes available in the PixelPaint Professional pop-down palette provide simultaneous access to more than 1,000 colors. To open the palette, click on the gray bar directly below the title bar of your artwork. The current palette appears on the left side of the pop-down Color palette, and clicking on the left and right palette switches displays the other palettes. The pop-down palette also displays a palette in the bottom left corner showing the last 16 colors used. Although the Paint and Tool palettes in Studio/32 and Color MacCheese are movable, the pop-down palette and the Tool palette in PixelPaint Professional are fixed, giving a less flexible work area.



Figure 9: The DeskPaint Tool palette contains the same basic paint tools as does MacPaint: the brush, pencil, eraser, bucket, and sprayer. But tools now operate in the foreground and background color. The foreground color is the currently selected paint color — the mustard-colored box — and the background color is the color of the canvas — the purple-colored box. The foreground color is applied with the paintbrush, bucket, spray can, or airbrush, and it also fills shapes drawn with the shape tools. When the foreground color is transparent, the background colors show through.

shadows. Eight-bit-color programs can simulate smooth transitions only by techniques such as *dithering*, which increasingly intermixes dots of two or more colors as each approaches the border of the other — a method that can't produce as smooth a transition as can be achieved with 32-bit direct color (see Figure 3).

#### Pick a Peck of Pixels

So how do you handle 16.8 million tubes of paint? Color theory, a complex topic in its own right, is beyond the scope of this article. Briefly, though, 32-bit programs make different *color models* available for computer artists to work with. The RGB color model represents the *additive*

also be able to open multiple view windows for a document, with independent magnifications, and you will be able to split a view window between two separate documents so that you can trace features from one document to the other.

Other high-performance features promised in this low-priced package are a scratch pad for testing effects before committing them to canvas; an editable color palette that can be saved; multiple undos and redos; anti-aliased lines, shapes, and text; and brush tools that can be adjusted for fade, opacity, repeat, and spacing as well as for size. MicroFrontier, 7650 Hickman Road, Des Moines, IA 50322; (575) 270-8109.

Scheduled for release in January is Time Arts' Oasis 1.0. In addition to a full complement of high-performance features — user-definable brush attributes, support for pressure-sensitive technology, customizable palettes that can be saved to disk, and a "before and after" feature for

previewing effects before making them final — this 32-bit program will ship with a separate video module that will transform the painting environment into a full-scale videographic system. The video module supports the HLS (hue, luminance, saturation) color model popular with video artists. It also provides a video-legal palette that limits color selection to colors supported by the NTSC (National Television Standards Committee). Support for the TrueVision NuVista videographic-adaptor alpha channel is also provided, letting you overlay graphics on a video channel or overlay live video on an existing background. The Oasis video module also provides support for video capture through the RasterOps ColorBoard 364 video-display card and the TrueVision NuVista. Oasis 1.0, including the video module when it first ships, will be priced at \$795. Time Arts, 1425 Corporate Center Parkway, Santa Rosa, CA 95407; (707) 576-7722.

The trend seems to be toward providing more features for less money while bridging creative environments — paint and video, or painting and object-oriented drawing programs. For example, last September Letraset cut the price of its high-end photo-retouching program, ColorStudio, to \$995 — less than half its original price — and began bundling its Shapes PostScript module, which removes some of the limitations of working with a photo-retouching program only.

As advertising agencies and graphic designers increasingly straddle the worlds of printed communication and video production and as full-color artwork and typography merge, we expect to see more blurring of the distinctions between the painting, video, and object-oriented software environments and the creation of more programs such as Oasis, Canvas, and ColorStudio with its Shapes module.

— Darryl Chan





Figure 10: A Color MacCheese innovation, the transmogrifier creates textured effects by creating groups of pixels with related colors. Holding down the mouse button and dragging the transmogrifier over a purple area, for example, "sprays" pixels of various shades of purple over the area.

theory of color — equal portions of red, green, and blue light create white light. Because this model deals with transmitted light, it is the default color system for most color monitors.

All four programs use the RGB system, which you access through the Apple Color Picker, a component of the Mac's System software that lets applications use a standard interface for selecting colors. The Color Picker dialog box contains a color wheel and a brightness bar; you can simultaneously select a *hue* (color) and a *saturation* (how "strong" the color is compared with white — pink is an unsaturated red) by dragging the cursor around on the wheel (see Figure 4). Scrolling up and down the brightness bar adds or subtracts white, adjusting the darkness of the color. Such a selection method has little in common with mixing dollops and splats of paint, but using the Color Picker is the only method of selecting new colors in Color MacCheese and DeskPaint. Color MacCheese also includes a miniature version of the Color Picker.

PixelPaint Professional and Studio/32 both offer several alternatives to the RGB color system: HSV (hue, saturation, value — where value is a brightness percentage), CMY (cyan, magenta, yellow — from the *subtractive* theory of color — equal portions of cyan, magenta, and yellow pigment withhold, or subtract, all light and thus create black), and the Pantone Matching System (a standard for specifying ink colors in the graphic-arts industry). PixelPaint Professional also has a Color Theory color picker in which you can select colors based on their relative positions on the color wheel, and it supports the CMYK (cyan, magenta, yellow, black) color system used in printing. You can work in this color model and generate separations directly from the program.

If none of this sounds very much like painting, hang on

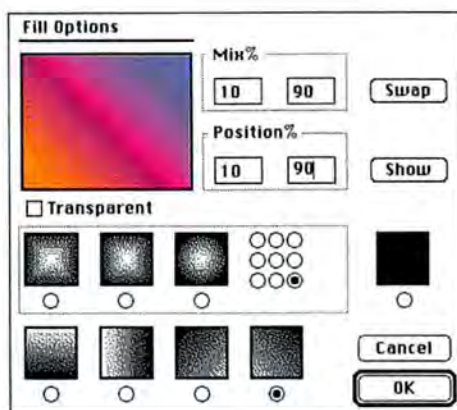


Figure 11: The DeskPaint Fill Options window lets you control graduated fills simply by clicking on the button under the starburst or directional fill of your choice. The Mix % boxes let you set the amount of graduation, as percentages, for the foreground and background colors.

a second. PixelPaint Professional and Studio/32 both let you mix colors with the daub-and-blob method — each has its own color mixer, an area in which you can swirl colors together (see Figure 5). When a color you like emerges in the color mixer, simply click on it with the eyedropper tool to add it to your palette.

### Palette Power

After picking a model and selecting your colors, you'll need a place to store your paints for quick access. Color MacCheese doesn't give you much help: It provides only two, noncustomizable palettes. The Paint palette provides access to 24 preselected colors, and the Pattern palette, which scrolls left and right, displays solid colors and patterns (see Figure 6). Unfortunately, it can display only 20 color swatches at a time, so you may do lots of scrolling.

DeskPaint provides a 256-color default swatch palette with a variety of colors and gray shades already installed. It also provides 256-Gray, Bright Colors, Pastels, and Earth Tones palettes. You can change colors within any palette by using the Color Picker, and you can save the palettes you create (see Figure 7) — for example, you could build a palette containing various shades of brown, orange, and rust; save it; and name it Autumn Colors palette.

PixelPaint Professional has a pop-down Color palette that contains four default palettes (see Figure 8). You move through the palette by using the right and left palette switches. When you've found the palette you want to work with, close the pop-down Color palette by clicking on the bar beneath the document name, and the newly selected palette will appear in the color selector for you to work with. PixelPaint's color mixer is part of this window — if you want to custom-mix a color, it can be a labor-intensive process: Go to the pop-down Color palette, mix the colors





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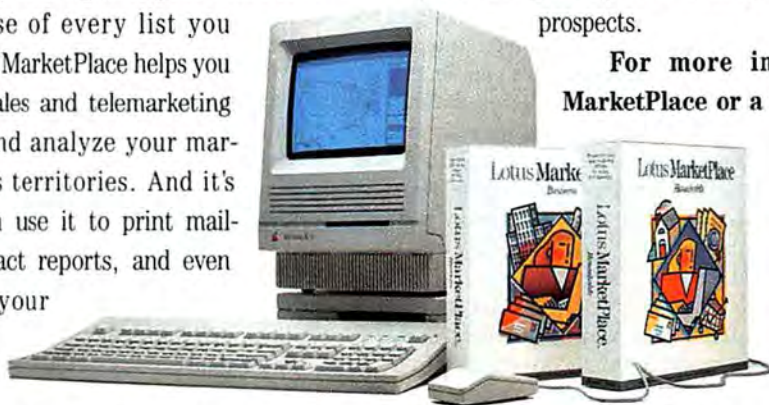


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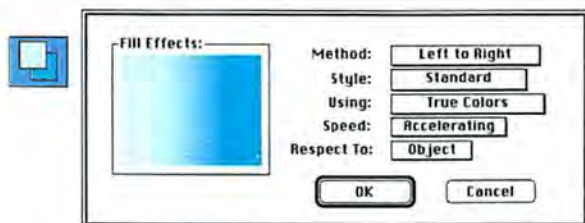


Figure 12: PixelPaint Professional fill effects are based on the foreground and blend colors displayed in the color selector. As you vary selections among the pop-up menu items — Method, Style, Using, Speed, and Respect To — you see the results in the Fill Effects box in the left part of the dialog box.

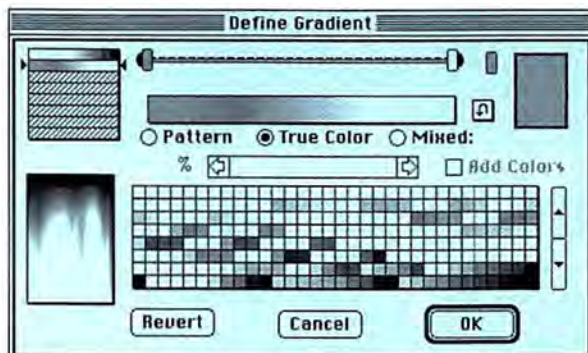


Figure 13: The Studio/32 Define Gradient window provides an easy-to-use environment for creating blends. Simply click on the color you want, and that color appears in the box in the upper right corner and in the color bead. Drag the color bead along the gradient bar, select a second color, and position that new color bead along the gradient bar. You can specify up to 32 colors in a gradient; placing colors far apart creates a subtle blending of color, whereas placing them close together creates more-abrupt transitions. Your blend appears in the gradient sample area, below the gradient bar.

from the scrolling palettes, and close the pop-down Color palette. (In the beta version of PixelPaint Professional 2.0 we saw, however, the interface is completely revamped; see the "On the Horizon" sidebar.)

Studio/32 also has four default palettes available in its Palette window, but they require fewer steps to use. The Palette window is a tear-off window you can keep anywhere on your screen — if you want to scroll through all four palettes, you'll have instant access to your colors. Because one of the palettes contains 254 empty cells, you can quickly build your own palette of colors. And because the color mixer is also a separate tear-off window you can keep on-screen for quick mixing, you can easily mix your own colors and build a custom palette.

Both Studio/32 and PixelPaint Professional come with preset palettes that offer a wide variety of colors, and you can save an unlimited number of custom palettes to disk. You can switch freely among palettes as you work, without affecting the colors in your document.

### Brushes with Greatness

The basic tool set for all 32-bit painting programs — or for all painting programs, for that matter — has its roots in the progenitor of all painting programs, MacPaint. MacPaint's tools were modeled after tools used by artists in the studio — brushes, pencils, erasers, and paint in buckets and sprayers. MacPaint also supplied tools for drawing straight lines, producing geometric shapes, and selecting areas of a picture for editing (see Figure 9). Unfortunately, MacPaint came with only two tubes of digital paint — black and white — a rather grim and limited palette for professional artists. Nonetheless, many MacPaint tools still provide artistic functionality — the brush, pencil, eraser, bucket, and airbrush or sprayer are available in today's high-powered color programs, along with some new tools and techniques.

If you've ever worked in oils, you've probably smudged paint onto your canvas with brushes, fingers, and palette knives. If you've worked with watercolors, you've probably used a wet finger for blending. You can continue your messy habit in electronic form: All four of the programs have tools for blending colors smoothly. Studio/32's blending tool, the water drop, can also be set to accomplish the reverse effect, sharpening the contrast between adjacent colors.

Studio/32 and PixelPaint Professional have an additional blending tool, the pointed finger. PixelPaint Professional's finger tool simulates dragging your finger through wet paint — the finger picks up some of all the colors it touches and drags them along through the other colors. Studio/32's finger tool acts like a finger with a dollop of paint on it — the color on the finger mixes with the colors through which it is dragged, and the effect decreases as you use up the paint on the finger.

Color MacCheese has added a transmogrifier, a tool that creates textured effects within areas of color by spraying multicolored dots from the same color family. You can, for example, use the transmogrifier to create a leafy or grassy texture from a single shade of green (see Figure 10). Another Color MacCheese tool, the rake, swaps dots from each side of the border where two colors meet and so can be used to help smooth color transitions.

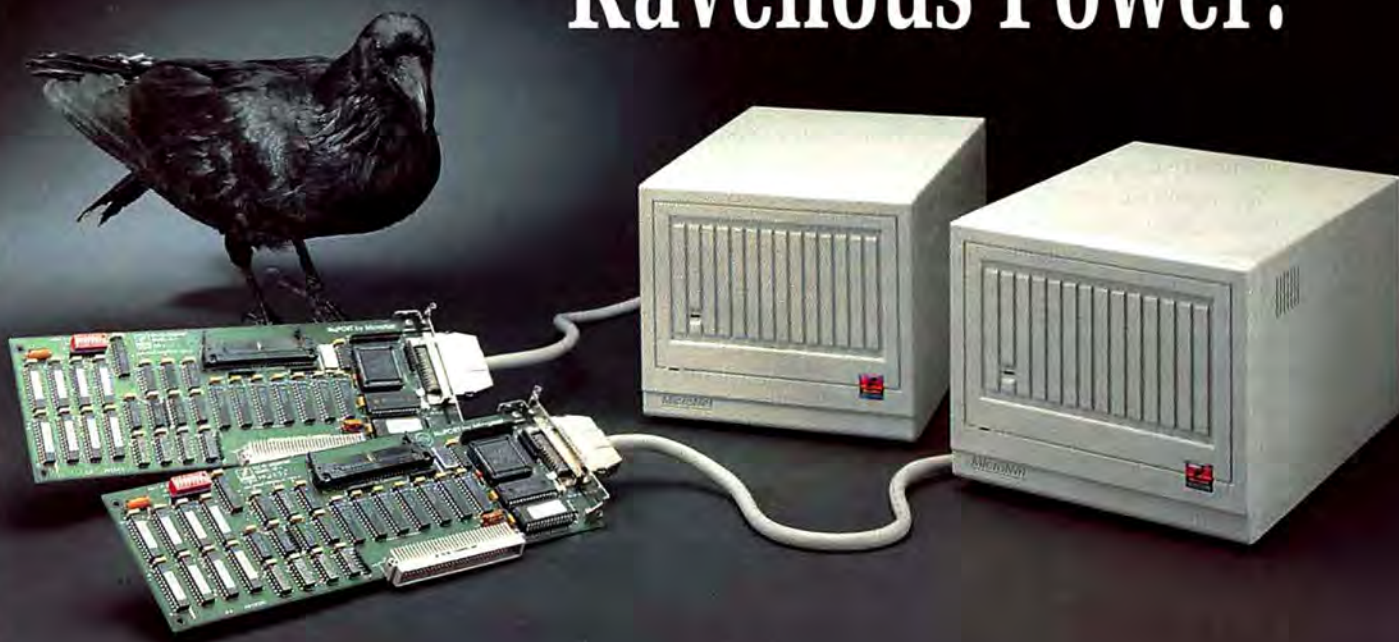
### Grading the Gradients

One of the most powerful capabilities of a 32-bit painting program is the ability to smoothly fill an area of the canvas with a blend of two colors, creating all the thousands of colors that make up the shades of difference between the two — a *gradient fill*.

Color MacCheese has a bucket tool that lets you produce two-color gradients in two steps. After you've finished painting an area with one color and selecting the second color, you just click and drag the bucket in the direction in which you want the gradient to fill; changing the direction creates different effects. In DeskPaint, you can set gradient



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specifications such as direction and shape in a dialog box (see Figure 11).

PixelPaint Professional adds even more control. You can control five aspects of fill effects: Method, Style, Using, Speed, and Respect To (see Figure 12). Method lets you select Top to Bottom, Bottom to Top, and so on, and Style gives options for Standard (smooth blending of colors), Dual Blend (fades from the foreground to the blend color and then back to the foreground color), and Venetian Blinds (displays the colors in a repeated slit pattern). The Speed selection gives you options for controlling the speed of the gradient — Constant, Accelerating, Decelerating, or a combination; these options change the relative widths of the color bands to simulate motion.

Studio/32 gives you all these capabilities and more, but in an intuitive and direct manner. You can specify up to 32 colors to be included in the gradient just by dragging color swatches onto a gradient bar (see Figure 13). You control

the widths of the bands by how closely together you place the swatches. You can store up to eight gradients per document in a pop-up palette and use any of them as the current paintbrush.

## Mask Making

Artists often mask portions of a piece to prevent changes as work continues in another area. If the paintbrush stumbles over an area you'd rather it hadn't, the paint will land on the masking material rather than on the painting; when you remove the mask, the painting remains unaffected. A good 32-bit painting program should let you mask areas with relative ease, and both Studio/32 and PixelPaint Professional meet the professional standard: You can mask any number of areas, using the selection tools, and any number of colors. Studio/32 also provides a dialog box in which to mask ranges of color.

In addition to masking, Studio/32 provides a draft page.

**Table 1: Pros and Cons of Graphics Programs**

	<b>Pros</b>	<b>Cons</b>	<b>Ideal Users</b>
<b>32-bit painting program</b>	<ul style="list-style-type: none"> <li>• Can create subtle variations of color at the pixel level.</li> <li>• Simulates the "real" painting environment with a remarkable degree of realism.</li> </ul>	<ul style="list-style-type: none"> <li>• Once you've released something onto the canvas, it is part of the bit map and not easily editable as a distinct unit.</li> <li>• Cannot globally change all pixels of one color to another color.</li> </ul>	<ul style="list-style-type: none"> <li>• A 32-bit painting program is ideal for commercial artists or illustrators who want complete control over the colors applied to the electronic canvas as well as a complete palette of tools for creating images from scratch.</li> </ul>
<b>Photo-retouching program</b>	<ul style="list-style-type: none"> <li>• Can break an image into its component color channels.</li> <li>• Can enhance brightness and contrast, apply filters, and correct colors.</li> <li>• Provides complete control over color separation.</li> </ul>	<ul style="list-style-type: none"> <li>• Has fewer tools for creating shapes.</li> <li>• Has a nonintuitive approach.</li> <li>• Although you can use the trial-and-error method to work with on-screen images, controlling color separations requires technical expertise.</li> </ul>	<ul style="list-style-type: none"> <li>• A photo-retouching program is the program of choice for illustrators and graphic artists who build artwork on a photographic base or enhance and modify photographs.</li> </ul>
<b>Object-oriented drawing program</b>	<ul style="list-style-type: none"> <li>• Images are easy to edit after objects have been placed on-screen.</li> <li>• Printed output not hampered by the relationship of the bit map to the printer. Because the image is an outline, it can be enlarged or reduced with mathematical precision.</li> </ul>	<ul style="list-style-type: none"> <li>• Handles only smooth gradient fills.</li> <li>• Textures are difficult to work with.</li> <li>• Usually requires reading the manual to learn how to work with most tools.</li> </ul>	<ul style="list-style-type: none"> <li>• An object-oriented drawing program is preferred by graphic designers and technical illustrators who need precision.</li> </ul>





# A “Breakthrough” Graphic Tool for Macintosh Artists

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#### Performance/Specifications

• Resolution: 1,270 lines/inch (0.02mm) • Accuracy:  $\pm 0.01$  inch ( $\pm 0.25$ mm) over entire active area • Reading speed: Max. 205 points per second • Data transfer rate: Max. 19,200 baud • Interface: RS-232C or optional GP-IB • Command set: Wacom II, MM, Bit Pad Two • Power supply: built-in (A2 to 11"  $\times$  11" tables) or external (A0, A1, A5).

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an additional layer on which to test new effects or try out ideas before committing them to your work in progress. Another Studio/32 exclusive is its separate text layer; text can remain separate and editable, or you can merge it with the rest of the pixels. In the other painting applications, text becomes part of the bit map and hence uneditable as text once you've moved the cursor to a new area.

Neither DeskPaint nor Color MacCheese provides this professional masking capability. When you use the Mask Selected Colors option in DeskPaint, for example, you can lasso areas of different colors and remove another different-colored area from within the larger area, but this isn't as useful as being able to create a mask layer. MacCheese's use of masks is limited: To protect portions of your work, you must put your whole painting into the background plane; the foreground plane then behaves like a sheet of protective acetate. You can still see the background plane, but the paint goes onto the foreground plane. If you like the results, you can merge the two planes; if you don't, however, you can delete the foreground plane without harming your previous work.

### The Full-Color Solution

Full-color, or 32-bit, painting programs bring the power of the Mac — and 16.8 million never-emptying tubes of paint — into the skilled hands of commercial and fine artists. Full-color does require more-expensive hardware, but if you're an artist who wants to tap into its power — to make smooth transitions between colors, to mix convincing shades of color for creating highlights and shadows as believably as you could with paint on a palette — you should move up to 32-bit. What a 32-bit painting program may lack in art-studio atmosphere, it more than adds in power and color control.

For our recommendations of which to bring into your Mac studio, see the "Bottom Line" sidebar. And if you miss the smell of turpentine that badly, you can always dab a little behind your ear.

**Darryl Lewis** has a master's degree in graphic arts. In previous lives, he was a printer and commercial artist and now trains firms in the South Florida area to make better use of their Macs. Kelli Wiseth, an associate editor at *MacUser*, is a former painter and computer-graphics artist.

### The Bottom Line

Not everyone needs a palette of 16.8 million colors. The hardware needed for 32-bit color — a 24- or 32-bit card plus color monitor — can set you back thousands of dollars, and the capabilities provided may exceed your needs. If your color work consists mostly of business graphics — bar charts, pie charts, and even photos of the board of directors — you'll probably find that the 8-bit, 256-color palette is more than adequate.

On the other hand, if you're a package designer, a graphic artist specializing in printed media for advertising, or a fine artist illustrating children books, we recommend that you find a place in your studio for Electronic Arts' **Studio/32 1.0** (\$695). It's a powerful program with a completely intuitive interface. Even with all its power, it won't send you flipping through the manual trying to figure out how to use it — you can dive right in and paint.

SuperMac's **PixelPaint Professional 1.0** (\$699) is also a powerful performer, but this version of the program is not easy to work with — following the manual is a must. Fortunately, SuperMac's documentation is easy to follow and well worth reading. PixelPaint Professional also provides support for color separation that's lacking in the other three programs. (PixelPaint Professional 2.0 should be available by the time this article is in print.)

At the lower end of the spectrum, Zedcor's **DeskPaint 3.03** (\$199.95) comes closest to approaching a professional-level tool — it lets you save custom palettes for later use and can handle resolutions up to 4,000 dpi. Because DeskPaint isn't designed to be a high-powered program, however, many high-level features are missing — you can't mix colors the way you can in either Studio/32 or PixelPaint Professional, for example, so you need to use the Color Picker to select colors and build your own palettes. DeskPaint does, however, make a great companion program for working with 32-bit-color scanned or clip-art images. DeskPaint, a DA, is bundled with its

object-oriented cousin, DeskDraw — a good buy.

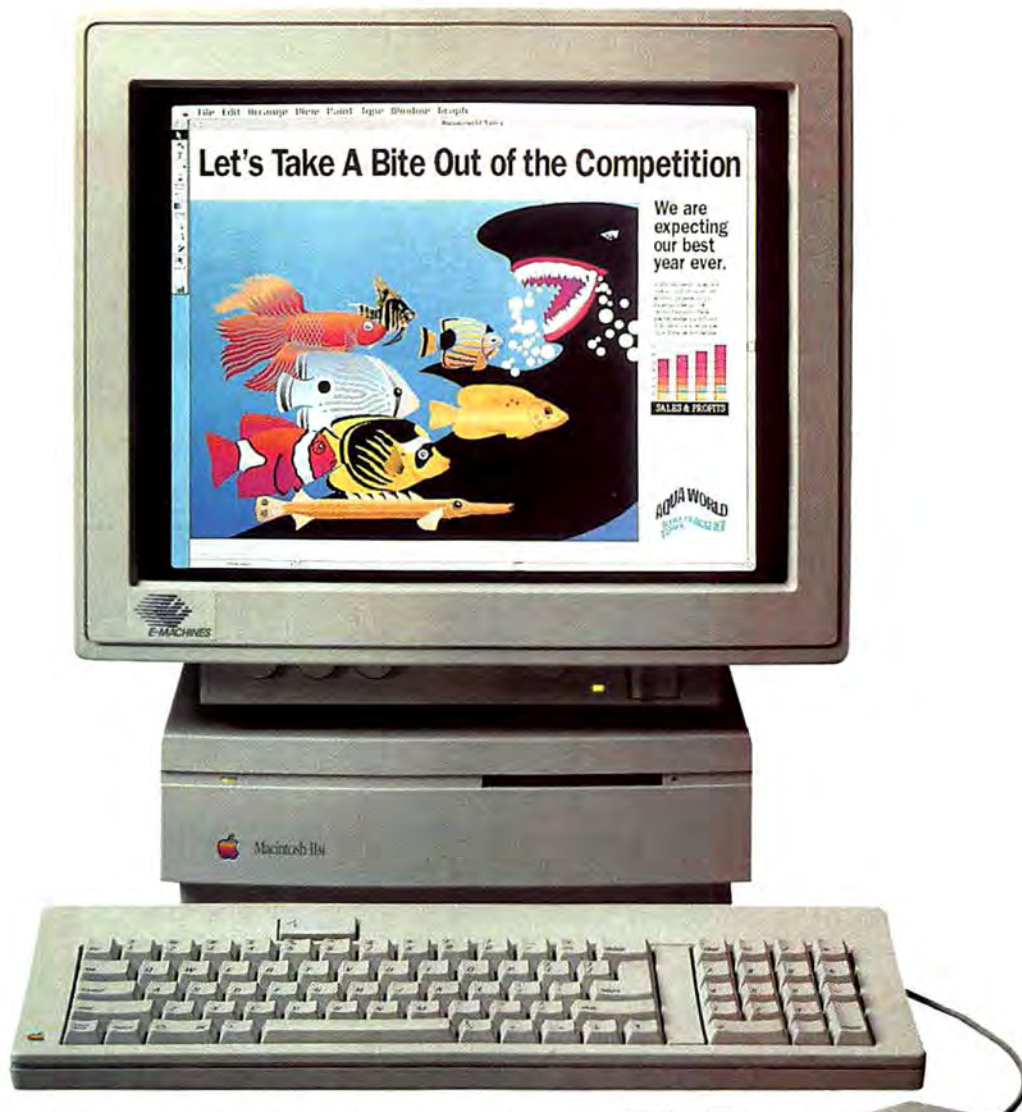
Delta Tao's **Color MacCheese** (\$99), with its 72-dpi-resolution limit and lack of rulers, is not intended to compete with PixelPaint Professional or Studio/32. Only one document can be open at a time, and MacCheese documents can be saved only in color PICT format, but the program can open MacPaint. Despite these limitations, its tools are effective and the price is remarkably low. Because MacCheese is easy to use and works as well in black-and-white as it does in color, consider it even if you have only a monochrome screen — you never know when you might upgrade to a color Mac.



Of the two professional paint programs, Electronic Arts' Studio/32 (right) gets our vote, even though SuperMac's PixelPaint Professional (left) has unique color-separation capability.



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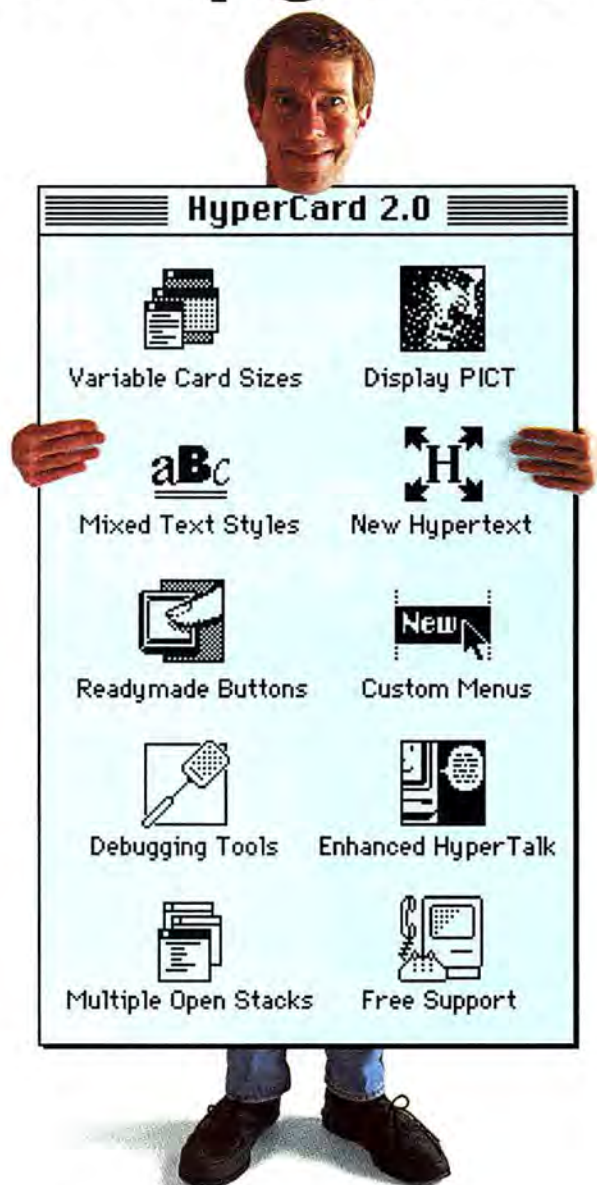
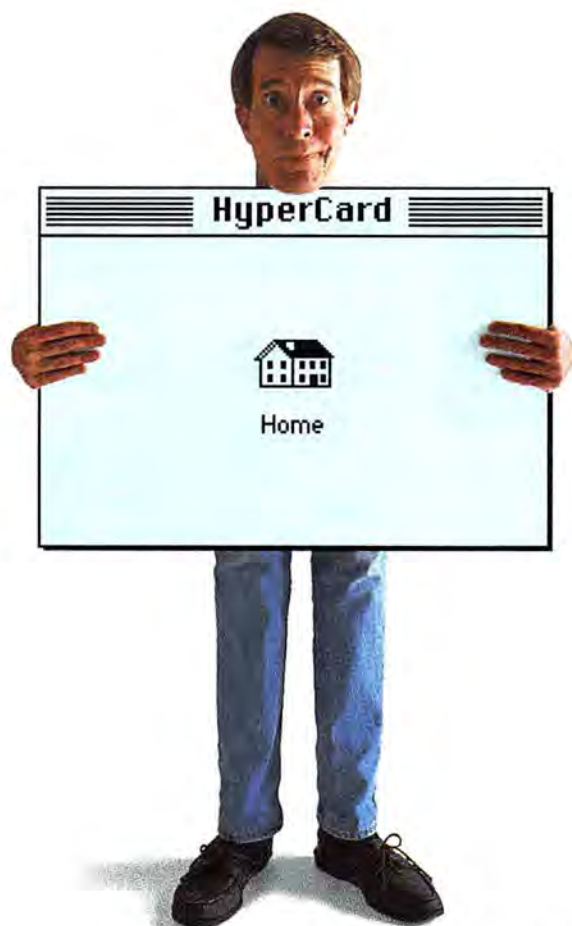
**Table 2: Features of 32-Bit Painting Programs**

				
● = yes ○ = no	<b>Delta Tao</b> <b>Color MacCheese 1.05</b> \$\$\$½	<b>Electronic Arts</b> <b>Studio/32 1.0</b> \$\$\$\$½	<b>SuperMac</b> <b>PixelPaint Professional 1.0</b> \$\$\$½	<b>Zedcor</b> <b>DeskPaint 3.03</b> \$\$\$\$½
<b>List price</b>	\$99	\$695	\$699	\$199.95
<b>Street price</b>	\$55	\$449	\$388	\$115
<b>Comments</b>	A good value for the money. Not intended as a professional tool. No customizable palettes. Limited to 72-dpi output.	Exceptionally easy to use. Extensive color-mixing capability. Separate type layer and draft page.	Interface needs overhaul. Functions often buried deep within menus. Excellent documentation. Extensive CMYK color-separation support.	Excellent value. Convenient 32-bit painting environment in a DA. Bundled with object-oriented drawing program. Includes customizable palettes.
<b>Memory required</b> (megabytes)	1 MB	5 MB for 32-bit, 2 MB for 8-bit	2 MB	2 MB
<b>Features</b>				
Max. document dimensions	3,500 x 3,500 pixels	RAM-dependent	RAM-dependent	4,000 x 4,000 pixels
Pixel-depth options	1-, 4-, 8-, 16-, 24-, 32-bit	1-, 8-, 16-, 24-, 32-bit	8-, 16-, 24-, 32-bit	1-, 4-, 8-, 16-, 24-, 32-bit
Output resolutions	72 dpi	72 – 2,540 dpi	72 – 2,540 dpi	72 – 4,000 dpi
Zooming range	100 – 900%	12.5 – 800%	100 – 400%	6.25 – 1,600%
Grid or measurement system	x, y coordinates	ruler	grid, coordinate display	ruler
Color models	RGB	RGB, CMY, HSV, HSL	RGB, CMYK, HSV	RGB
Bundled software	none	Gallery, ColorCam	PixelScan	DeskDraw
Formats opened	MacPaint, PICT	MacPaint, PICT, TIFF	MacPaint, PICT, TIFF, PixelPaint	MacPaint, PICT, TIFF
Formats written	PICT	MacPaint, PICT, TIFF, JPEG	MacPaint, PICT, TIFF, Startup, Stationary	MacPaint, PICT, TIFF
TIFF compression	○	●	●	●
Customizable palettes	○	●	●	●
Color mixer	○	●	●	○
PMS* support	○	●	●	○
Anti-aliasing	●	●	●	●
Auto-trace tool	○	●	●	●
Bezier curves	○	●	●	○
Customizable brushes	●	●	●	●
Linear gradient fill	●	●	●	●
Radial gradient fill	●	●	●	●
Independent text layer	○	●	○	○
Color separations	○	○	●	○
Color-printer support	●	●	●	●
PostScript-printer support	●	●	●	●
	Delta Tao Software, Inc. 760 Harvard Ave. Sunnyvale, CA 94087 (408) 730-9336	Electronic Arts 1820 Gateway Dr. San Mateo, CA 94404 (415) 571-7171	SuperMac Technology 485 Potrero Ave. Sunnyvale, CA 94086 (408) 245-2202	Zedcor 4500 E. Speedway, Suite 22 Tucson, AZ 85712 (602) 881-8101

\* Pantone Matching System



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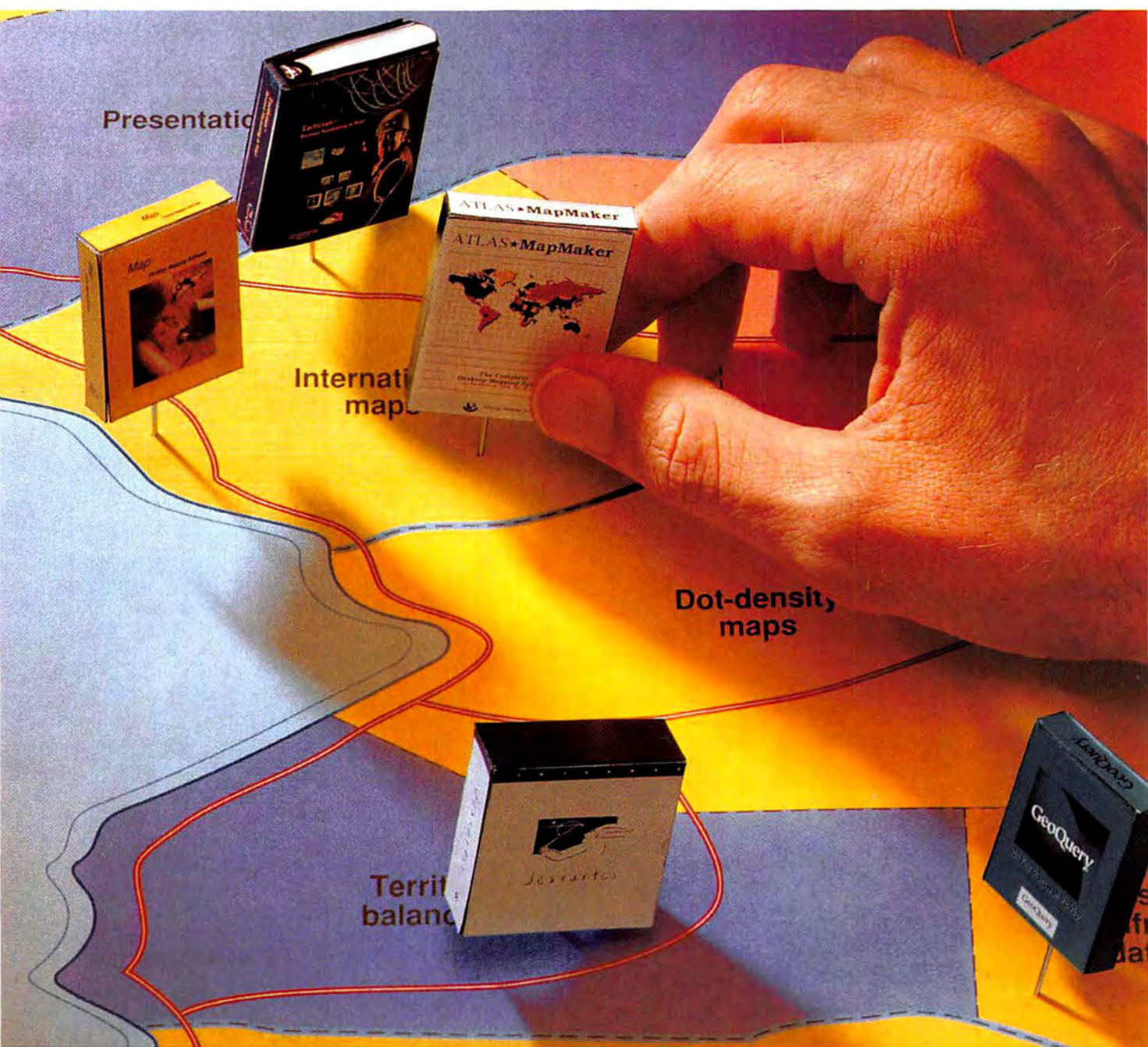
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## Executive Information Systems







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# PUTTING YOUR BUSINESS on the Map

*Desktop mapping software gets your data out of a spreadsheet and onto a map.*



BY  
**JEFFREY A.  
STEINBERG**

If you've ever seen a war movie, you know the map-room scene — it's the one in which a huddle of officers studies a map covered in pushpins, showing the formidable advance of the enemy and the seemingly hopeless position of the allies. Then — after studying the map for several seconds — some smart corporal visualizes a brilliant strategy and moves a few pins around the map, and half an hour later, the good guys are marching ahead in triumph.

The message: Plotting your situation can often give you the creative edge needed for planning and problem solving. If you're on the front lines of the business battle, for example, a little strategic planning in your own map room can help you understand how your data relates to the world around you. Understanding the spatial relationships contained in business data is the critical success factor in decisions about such matters as situating new stores, expanding into new territories, and developing new products.



## Desktop Mapping

With the introduction of three software packages (Descartes, MapInfo, and Tactician) and major updates to two older packages (ATLAS\*MapMaker and GeoQuery), desktop mapping has emerged as a new Mac-software category. Often for less than \$1,000, your Mac can now do detailed geographic analyses that used to be possible only with mainframe computers and software packages that cost \$100,000. The new Mac packages let you create an electronic pushpin map (called a point or location map) to plot specific locations. You can also create thematic maps that target specific regions, such as counties or zip-code areas in which residents earn more than \$50,000.

Another use for desktop mapping is to balance sales

territories. Rather than assigning each member of your sales staff to a territory, based solely on geography, you can divide territories by sales volume or by the number of customers located in each.

Geographic-analysis products aren't all the same. Some are most effective when used as presentation tools. Others have extensive internal database programs and can also transparently access external databases — even on mainframes. Which product is best for you depends on your needs and your pocketbook: Prices range from less than \$400 to around \$10,000.

### ATLAS\*MapMaker: Presentation Mapping

If you already have an established database that's set up in 4th Dimension or FileMaker Pro, for example, and you want to add mapping capabilities, try ATLAS\*MapMaker from Strategic Mapping (\$495). MapMaker is best described as a presentation mapping package. It doesn't have an internal database program, and it can't access any external databases directly. You have to manually enter data, import tab-delimited text files, or paste files in from the Clipboard.

The maps created in MapMaker, as in most of the other packages reviewed here, are based on boundaries such as state or county lines. MapMaker comes with many maps: the countries of the world divided by continent, Canada delineated by provinces and territories, and the U. S. divided by states and counties. In addition, you can buy specialized maps — such as those of congressional districts — from an extensive collection. MapMaker also comes with files containing demographic data, such as housing costs and population changes, and the locations of major U.S. cities.

To get an idea of how MapMaker can help you make business decisions, imagine that you own a moving company in Massachusetts and want to target your sales effort by tracking migration patterns among people in New England. The first step is to export a file from your database (or from the demographic data supplied with MapMaker) that shows recent population changes you want to plot. You can create a thematic map of New England shaded by the percentage of population change (see Figure 1). Start with a projection of the continental United States, and then select the six New England states. Next, import a text file of a spreadsheet containing a row for each county in New England and up to 30 columns of U.S. census data. MapMaker displays the map in Figure 1 on-screen in less than ten seconds. This map has an eight-element legend in the lower right corner, but you can easily redivide the data to create different legend elements. To map the other columns of census data you've imported, pull down the Categories menu and select the desired entry.

MapMaker can also create graduated-point maps. These maps indicate, for example, which stores within a chain have the highest sales. Another type of map you can create in MapMaker is the dot-density map, which shows the

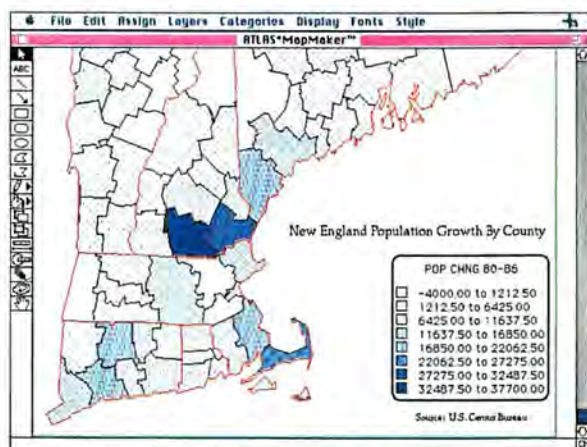


Figure 1: Mapping data can help you understand its significance. In this ATLAS\*MapMaker map, each county gets a different fill pattern to show population growth. The data was imported from a tab-delimited text file.

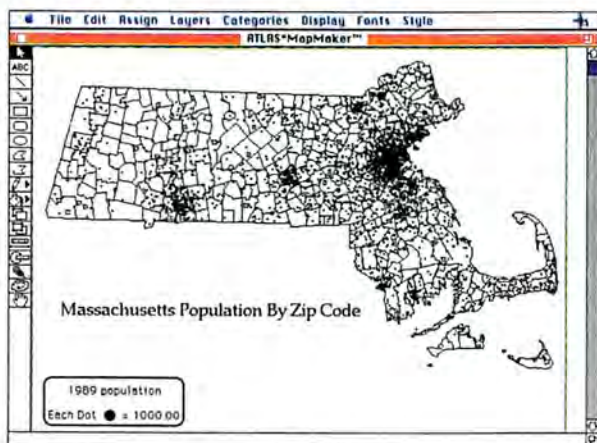


Figure 2: This dot-density map of Massachusetts lets you see significant population clusters immediately. Each dot represents 1,000 people. Because the dots are distributed uniformly within a given boundary, they show overall density, not exact population areas.



distribution of your data. Figure 2 shows a dot-density map of Massachusetts' population in which each dot represents 1,000 people. (The high-end package Tactician is the only other product reviewed here that can create dot-density maps.) MapMaker's zip-code-level and county-level maps have good cartographic quality, but the state-level maps are slightly jagged.

MapMaker provides a Tool palette for adding captions, headlines, arrows, and circles of various sizes marked in miles. It also includes a digitizing tool, which lets you accurately add elements such as political boundaries, power lines, and rivers to a map. The ruler tool lets you determine the straight-line distance between two points. These excellent presentation capabilities come at a price, however. At \$495, MapMaker may well cost more than the database or spreadsheet program you need to use with it.

### GeoQuery: New Version, New Firm

For those who need an inexpensive mapping package that lets you access a mainframe database, GeoQuery 2.0.1 provides a lot of sophisticated features for \$395 (see review, November '90, page 59). Previously marketed by Odesta, GeoQuery is now being sold by its original developer. It doesn't contain a database, but it can read delimited ASCII files and, if a Mac is connected to an Ethernet network, it can query remote mainframe databases via Apple's DAL (Data Access Language, formerly called CL/I). Because DAL transparently accesses database tables, this is a key feature if you work in a corporation that uses a central database.

GeoQuery's base maps of the U.S. go only to the state level, which is a drawback. If you want to do county-level mapping, you have to purchase separate atlas files (see Figure A in the "Buyer, Beware" sidebar). No zip-code or international-boundary atlases are available.

GeoQuery creates point maps based on zip codes; its thematic maps are based on county or state maps. It has the sophisticated capability of mapping data based on text. Figure 3 shows, as an example, the location of U.S. energy companies by zip code, and it also shows the type of energy each company produces. GeoQuery created this map by searching data imported from Lotus MarketPlace (future versions will be able to query MarketPlace directly) and determining that there were two types of energy companies in a particular area — oil/gas and coal. It then color-coded each pin appropriately (the third color is for zip codes in which multiple energy-producing companies are located).

To be of any real use, a geographic-analysis package must go beyond creating a map, so that users can see the data values behind the coloring of regions or at the location of points. GeoQuery's aptly named Snooper tool lets you see underlying data. To develop a list for on-site visits, a manager at an energy-equipment company could use the map in Figure 3 to create a circle around the company that shows where potential customers are located within a 100-mile radius. When the Pin List item on the Analysis menu

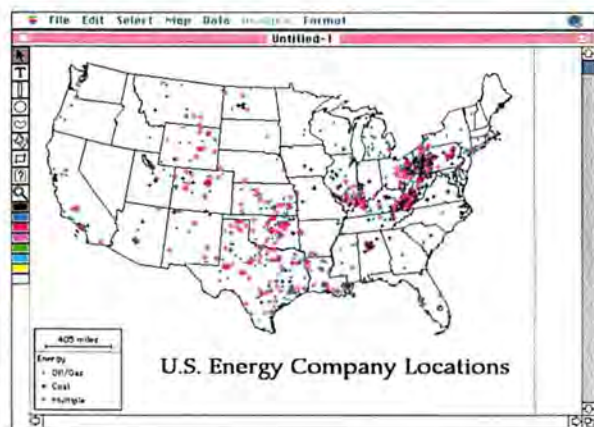


Figure 3: This GeoQuery point map shows divisions within data clearly. The energy-company data was exported from Lotus MarketPlace and sorted based on the type of energy produced (oil/gas or coal). Each dot represents one company.

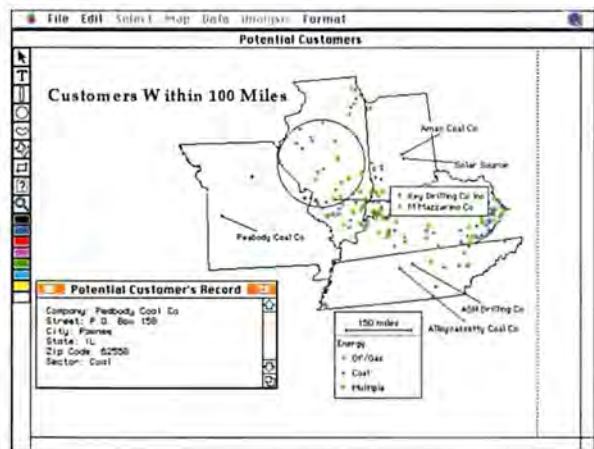


Figure 4: You can select records from a GeoQuery map by using the circle tool. After defining the size of the circle, all records within it are highlighted. You can export these records into a word processor to create a mail-merge letter — announcing a new store location, for example.

is selected, the name of each company in the region appears (see Figure 4). The manager can transfer all the information on each site to a word-processing program to create a mail-merge letter targeting these companies.

Although it lacks an internal database program, GeoQuery is a full-featured product at a reasonable price. If you need the power of an internal database, however, MapInfo or Descartes may be the right program for you.

### Descartes: Iconic Mapping

Descartes and MapInfo each contain database programs and querying tools, but unlike GeoQuery and Tactician, they can't access remote mainframe data via DAL. This



## Desktop Mapping

isn't a problem if you have a small business that keeps all its data files on a Macintosh computer. If you're in a corporate setting, however, the lack of DAL means that getting information from the central database to your Mac can be a hassle.

Descartes (\$795), named for the famous French mathematician René Descartes, offers an easy-to-use relational-database program that uses icons to represent data and querying tools. Descartes comes with base maps only of the U.S., although Intermap says it will release international cartography soon.

Descartes has the best Macintosh interface of all the

programs reviewed here. It extends the desktop metaphor into its database program by creating a Descartes folder and icons when the program is launched. This desktop is internal to the product, even though it looks as if it were created by the Finder (see Figure 5). You can create other folders to organize the data dictionary (which contains base maps and data) and launch tools by double-clicking on them.

The dictionary icon lets you access the collection of records that comes with Descartes — data on states, counties, cities, interstate highways, and zip codes. Each collection is referred to as a basket, and individual records within a basket can have links to other baskets. Boston, for example, can have a link to its parent county (Suffolk), its parent state (Massachusetts), and its zip code (02132 for general delivery).

Data manipulation — for creating presentation maps, reports, or graphs — is built around six tools: the map, bar chart, report, tiler, updater, and importer. You must use the importer tool to place data in a modified Descartes database, because the program can't work with foreign files directly.

The searcher and tiler tools are used to create output baskets of records that are to be mapped. Let's say that the owner of a chain of automotive-parts stores wants to locate a new store in a nearby county in an area that comprises households that earn more than \$30,000 and have at least two cars. The owner could create a basket of counties that match these criteria by entering **Median\_Income > 30,000** and **Cars\_Per\_House > 2** in the Searcher dialog box. The tiler tool lets you determine how your data will be divided on the map — into four quartiles, for example. One of the tiler's limitations is that it allows sorting based on equal numbers of records only, not on other methods such as mean and standard deviation.

To create a map, you simply drag the appropriate output baskets onto the map legend. If you're mapping at the state level and want to delineate other boundaries, such as highways or counties within the state, the Layers pop-up menu helps you do this.

Although Descartes is easy to use, it's not as good for creating presentations as MapMaker is, because you can't annotate maps with arrows for identifying key features. Its detailed state and county base maps, excellent Mac interface, and internal database programs are pluses. But if you need more-sophisticated options, such as city-level mapping, take a look at MapInfo.

### MapInfo: From DOS to Mac

Like Descartes, MapInfo for Macintosh — a port of the DOS version — contains an internal database program and querying language as well as mapping and graphing functions. MapInfo (\$695) is built around a SQL (Structured Query Language) database that can read and write its own files as well as FoxBASE+ files. It can also read Excel, Lotus 1-2-3, and tab-delimited text files.

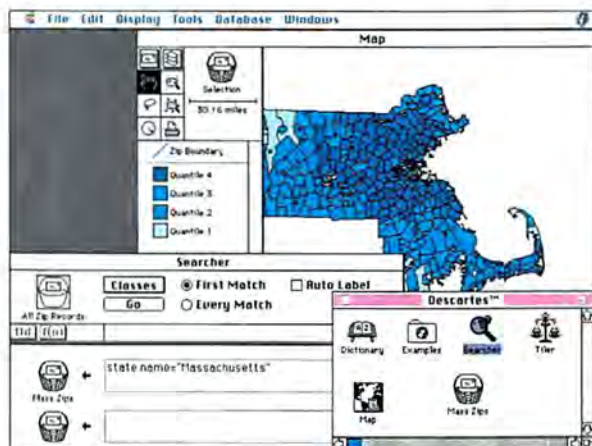


Figure 5: Descartes extends the Mac desktop metaphor by using icons to represent data and analysis tools. The basket icons represent collections of records that you can map by dragging them onto the map legend.

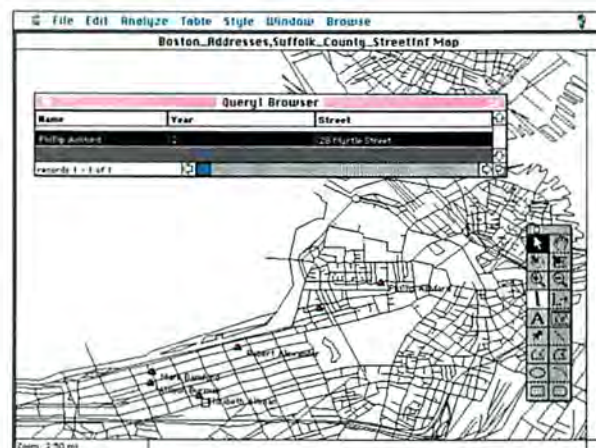


Figure 6: MapInfo has optional maps that let you do street-level mapping. Although the program doesn't know how many buildings there are within a block, it does know the range of valid addresses and what side of the street addresses are on. MapInfo uses this information when it plots an address, making an educated guess as to a particular building's location within a block.



## Buyer, Beware

If you're thinking of buying desktop mapping software, you need to look at more than just the price. The following questions should help you figure out which features are most important to you.

**Do I need an internal database program?** If you buy a desktop mapping package with an internal database program, you may need to reenter data that you already have in another database or spreadsheet. This can cause problems if you need to update or revise your data. Decide if you want a package that can deal with your data directly (no matter where it resides) or one that requires importation of data.

**How are data and boundary maps updated?** Most vendors sell supplemental demographic data. You can use this data, along with your own sales data, to build a

snapshot of a typical client and then plot the locations where those clients are most likely to be. Before buying additional data, carefully check the scope of the boundary files and demographic data to make sure it's what you need. Because zip codes and other demographic boundaries change fairly frequently, ask how often the data is updated, how much updates cost, and how you will be notified of updates.

**Do I need easy access to mainframe data?** Don't underestimate the difficulty of getting data from a database on a mainframe to your Mac, using a product that doesn't support DAL. DAL support can greatly reduce the time it takes to analyze ever-changing corporate data. This time savings can easily pay for a more expensive software package that supports DAL.

**How much disk space do I need?** The maps provided with these packages can take up a lot of space — from 1 to 19 megabytes for the *minimum* configuration, depending on the product. You'll need even more space if you add optional modules. A full-blown Tactician implementation that includes U.S. street maps requires nearly 700 megabytes of space — or a CD-ROM drive — and that's before you've added any of your data.

**What kind of technical support is available?** As with any complex software package, access to good technical support is vital. You need to ask how much it costs to extend technical support when the initial support period ends. Some vendors offer free support; others charge a percentage of the purchase price per year.

Figure A: How the Prices Stack Up

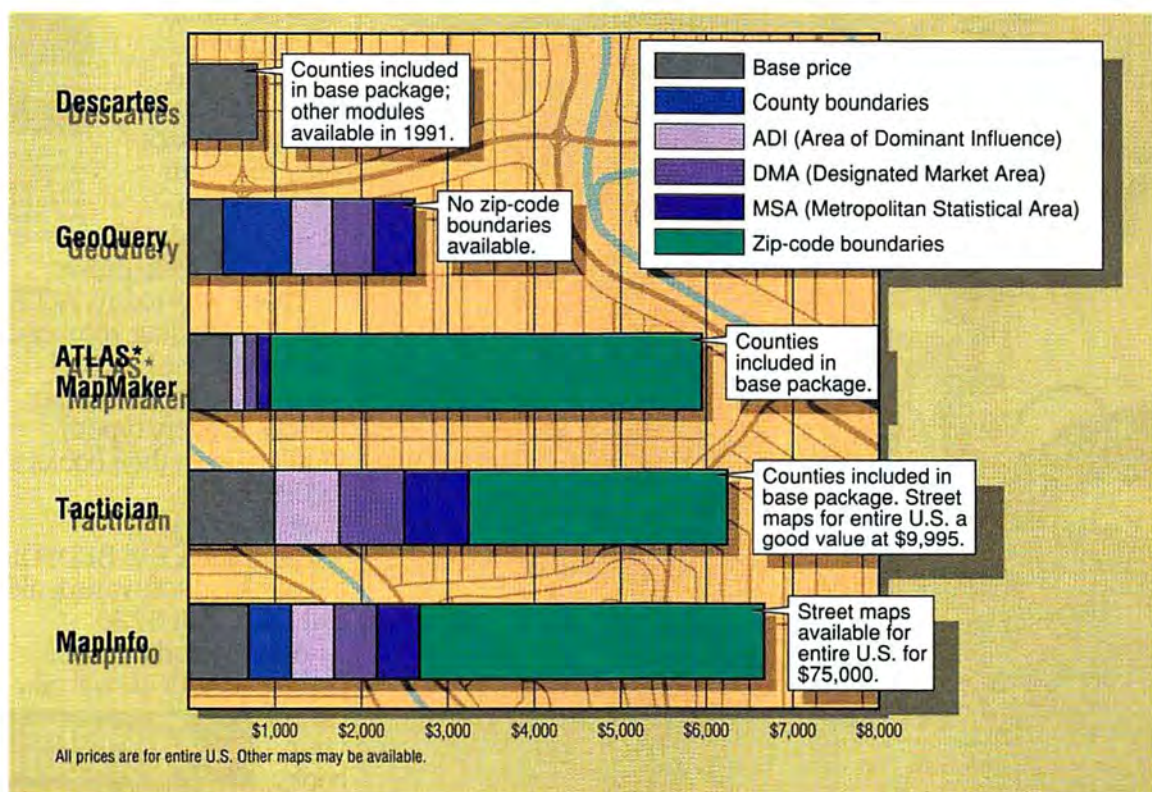


Figure A: The boundary files that are available for desktop mapping products can differ vastly. Some vendors include zip-code files in the base package, some require that you buy these files separately, and others don't provide these files at all. There's considerable variation in price as well. The chart shows some of the additional boundary files available for each product and compares pricing.



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## Desktop Mapping



Figure 7: Tactician contains an innovative 3-D spreadsheet that shows summary information for each mapped site as well as a detailed listing of all the elements in the trade area.

MapInfo's Browse, Map, and Graph menu items let you view database tables in three different ways. The Browse window displays data as it would appear in a standard database; the Map window lets you plot points or shade areas; and the Graph window lets you construct area, bar, line, and pie charts.

To plot data tables on the map, you select a base-map layer — such as a map of the U.S. — and then add transparent layers. You can construct a three-layer map that contains state boundaries, customer sites, and U.S. highways (which are available separately).

You can select points on the map and combine them into a subset of the original data by shift-clicking on multiple points or by selecting points with the radius and polygon tools. After selecting the points, you can use the Browse option to view the table entries for those records. You can save the collection as a separate table.

MapInfo and Tactician are the only two packages tested here that can perform street-level "geocoding," or mapping, which lets you plot street addresses. MapInfo's base maps for U.S. cities cost \$225 per county or a steep \$75,000 for the entire U.S.

When you're geocoding street addresses, MapInfo matches the base-map table and the table field that contains the street address. If it can't match a street address, MapInfo displays a list of streets that are spelled similarly. Although MapInfo doesn't know the *exact* geographic location of each address or how many buildings there are in a block, its database does know which side of the street an address is on and the ranges of valid street addresses within a block. When it's time to plot the map, MapInfo makes an educated guess as to the location of each address (see Figure 6).

Beyond doing street-level mapping, MapInfo can create thematic maps of zip-code boundaries, although to do this you need to buy optional boundary files. These files cost

\$395 per state or \$3,995 for the entire U.S.

MapInfo plots maps of large areas by using latitude and longitude rather than the more common adjusted (Mercator) projections. The resulting U.S. map, for example, although accurate, looks strange. One surprising drawback of MapInfo for Macintosh is that — unlike the DOS version — it lacks digitizing support for adding boundaries and lines. This means that you can't accurately place additional items on the map.

MapInfo is still a new product, and it contains several small bugs, the worst being its inability to import zip codes correctly. For example, when reading a tab-delimited text file containing zip codes of customer locations in Massachusetts (which begin with zero), MapInfo incorrectly read the number as a numeric field and stripped the zero off. In addition, the program couldn't read empty fields in a text file as separate fields, making it difficult to correctly align fields in a table.

Despite these problems, MapInfo provides high-end features for geographic analysis. If you want to use your Mac to do heavy-duty geographic analysis, however, you should consider Tactician.

### Tactician: The High End

In terms of performance, you can't get much more high end than Tactician. It's a vertical-market application targeted toward anyone doing complex marketing and retail-sales analysis. It has an excellent, easy-to-use interface, and like GeoQuery, it supports DAL.

## The Bottom Line

With five software packages available, the desktop mapping market is becoming crowded. Each of the five products reviewed here has different strengths geared to specific needs. If you want to add presentation mapping capabilities to an existing database or spreadsheet program, consider **ATLAS\*MapMaker** (\$495). It's fast and has the best map annotation of the packages reviewed. If you buy a product that has an internal database, it will only duplicate capabilities that you already have.

For those who don't have an existing database program and don't require street-level mapping, **Descartes** (\$795) contains excellent maps and a relational database for a reasonable price. If you're working with data (including street addresses) from a variety of sources including Lotus 1-2-3, FoxBASE+, or text files, you might want to consider **MapInfo for Macintosh** (\$695), which has good SQL and native file-manipulation features. Version 1.0.1 is a new product that has some minor bugs.

**GeoQuery** (\$395) is best for corporate users doing sales and customer-location analysis on a budget. Its DAL interface, low price, and extensive features make it a natural in this setting.

**Tactician** (\$995, or \$3,995 for a CD-ROM disc with the base package and zip-code boundaries) is a good choice, in terms of price and performance, for anyone doing more-sophisticated marketing, retail-sales or territory analysis, and street-level mapping.



Tactician is distributed either on floppy disks (\$995) or on a CD-ROM disc that also contains the boundaries of all U.S. zip codes (\$3,995). You can also get street maps for the entire United States (70 percent of the country was complete as of this writing, with the remainder scheduled to be finished in mid-1991). The same information for MapInfo costs \$75,000.

Tactician provides several ways to classify and divide data. It also has standard spreadsheet tools for performing mathematical operations. It uses a spreadsheet metaphor for displaying (in text form) and manipulating data. Like MapMaker, Tactician can create dot-density maps, and it contains a built-in bivariate-analysis tool, which lets you compare two mapped variables such as age and income.

Tactician has three mapping modes: Standard, Sites, and Territories. From data contained in the spreadsheet, Standard mode is for creating basic maps that contain points, polygons, and lines. The Sites mode uses an innovative 3-D spreadsheet to show retail sites and their trade areas. After defining the site name in the spreadsheet, you create the site on the map with the polygon and circle-carver tools. In this manner, you can display the site boundary and create pie or bar charts on the map that delineate data for each of the sites (see Figure 7). Tactician lets you base trade areas on whole or partial zip codes, census tracts, counties, MSAs (metropolitan statistical areas), or other optional base maps. Clicking on the name of the trade area in the spreadsheet displays a "detail" sheet, or third dimension, for all the elements in the trade area.

Although the Sites mode works with partial map elements (for example, you can divide one zip code into several areas), the Territories mode works only with complete elements (such as a whole zip code or county). Tactician lets you balance the territories on any spreadsheet column, such as sales or population. First you assign the value in a particular territory (for example, a population of at least 25,000). You can add or subtract elements from a particular territory by using the chart tool. You can immediately see how the territory fits into the value you're looking for (a pop-up thermometer shows you when you've created the territory that best matches your goal).

Tactician's strongest capability is performing street-level address geocoding across a majority of the U.S., thanks to an excellent address-matching system licensed from Geographic Data Technologies. On a Mac IIcx, Tactician can find any address in its database in less than two seconds.

Tactician fills a specialized niche. If you're in the market for this kind of high-end analysis, you'll find it to be a well-designed product.

### Plenty of Choices

Geographic analysis offers valuable tools to the savvy businessperson. Understanding the spatial relationships in business data lets you make the most of your investment in corporate data — and in your Mac.

Geographer Jeffrey A. Steinberg is currently a graduate student at MIT's Sloan School of Management.



From left to right:  
ATLAS\*MapMaker,  
Descartes, GeoQuery,  
MapInfo for Macintosh,  
and Tactician



## Desktop Mapping

**Table 1: Features of Geographic-Analysis Packages**

<p>● = yes ○ = no</p>	ATLAS* MapMaker 4.5	Descartes 1.0.3	GeoQuery 2.0.1	MapInfo for Macintosh 1.0.1	Tactician 2.0
	\$\$\$½	\$\$\$½	\$\$\$	\$\$\$	\$\$\$½
List price	\$495	\$795	\$395	\$695	\$995 (CD-ROM disc, \$3,995)
Comments	Fast presentation mapping package. Extensive map and data library. No internal database program.	Innovative, easy-to-use icon-based internal database program. Maps limited to U.S. Lacks DAL.	Excellent feature set for the price. Lacks international maps and zip codes. DAL interface a plus for corporate users.	Internal SQL database and excellent import facilities. Street-level mapping expensive for entire U.S. Lacks DAL.	Excellent interface and performance. DAL interface. Reasonably priced street-level mapping. Maps limited to the U.S.
Configuration (minimum Mac requirements)	Mac Plus (1 MB of RAM)	Mac SE (2 MB of RAM)	Mac Plus (1 MB of RAM)	Mac Plus (2 MB of RAM)	Mac II series with color monitor (4 MB of RAM)
Disk space required (minimum)	3.6 MB	10 MB	1 MB	5.9 MB	19 MB
Features					
International maps	●	○	○	●	○
U.S. boundaries					
State	●	●	●	●	●
County	●	●	●*	●*	●
Zip code	●*	○†	○	●*	●*
ADI §	●*	○†	●*	●*	●*
DMA °	●*	○†	●*	●*	●*
Dot-density mapping	●	○	○	○	●
Street mapping	○	○	○	●*	●*
Internal database program	○	●	○	●	○
DAL	○	○	●	○	●
Territory balancing	○	●	○	●	●
Files read	tab-delimited files	tab-delimited files	tab-delimited files	Excel, Lotus 1-2-3, FoxBASE+, tab-delimited files	tab-delimited files
Digitizing support	●	○	○	○	○
Extended technical support	\$50	free	free	\$145 per year	15 percent of purchase price per year
	Strategic Mapping, Inc. 4030 Moorpark Ave. Suite 250 San Jose, CA 95117 (408) 985-7400	Intermap, Inc. 13 Dartmouth College Hwy. Lyme, NH 03768 (603) 795-4751	GeoQuery Corp. 475 Alexis R. Shuman Blvd., Suite 380E Naperville, IL 60563 (800) 541-0181	MapInfo Corp. 200 Broadway Troy, NY 12180 (518) 274-8673	Tactics International 16 Haverhill St. Third Floor Andover, MA 01810 (800) 927-7666 (508) 475-4475

\* Available separately

† Expected to ship in 1991

§ Area of Dominant Influence

° Designated Market Area



# Tomorrow's Upgrade For Your Mac Is Only \$59\*

**FREE!**  
STEP-BY-STEP  
VIDEO  
INSTRUCTIONS

A MacWarehouse Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable overnight service will have your Kit in your hands tomorrow!

## MORE BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spread-sheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

## PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. Just open your Mac, slide out the main circuit board and plug in your SIMMS. Our FREE video will give you STEP-BY-STEP installation instructions. Every type of Mac is covered and we think we've made it a breeze.

## WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs - (2 @ \$59 ea.).

The chart explains exactly what you need to achieve the desired level of performance.

To upgrade a 4-socket Mac Plus or SE to this amount of memory.	Do this: (Install in multiples of two only)
2 MB	Remove all four existing 256K SIMMS, install two 1 MB SIMMS, leave two sockets for future expansion.
2-1/2 MB	Remove only two 256K SIMMS, install two 1 MB SIMMS.
4 MB	Replace all four 256K SIMMS with four 1 MB SIMMS.
To upgrade an 8-socket Mac II, IIfx, IIfx, or SE 30 to this amount of memory.	Do this: (Install in multiples of four only.)
4 MB	Remove all four existing 256K SIMMS, install four 1 MB SIMMS, leave remaining sockets for future expansion.
5 MB	Keep existing 256K SIMMS, install four 1 MB in remaining sockets.
8 MB	Remove all four 256K SIMMS, install eight 1 MB SIMMS.

To open your Mac Plus or SE, you'll need a specially designed tool - it's available from us as part of a handy tool kit for just \$9.

## WHAT YOU NEED TO KNOW

Memory chips come factory-installed on plug-in cards, called SIMMS (Single Inline Memory Modules). Each one megabyte SIMMS card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dove memory products.

Prices can vary a lot, based on quality, speed and demand. At press time our price for

1MB, 100ns SIMMS is \$59. Please call for the very latest prices and availability. Our sales staff will tell you what you need and help you make your choice an easy one.

## SPEED

Do you need 80, 100 or 120 Nanosecond (ns) chips? Nanoseconds are billionths of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor reads 120 ns (or faster) chip, and the 68030 Macs like the speedier model.

## OVERNIGHT DELIVERY

Place your order by 12:00 am (E), weekdays and we'll deliver overnight for just \$3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

**MacWAREHOUSE**  
**1-800-255-6227**

Call toll-free

Twenty-four hours a day,  
seven days a week.

Inquiries: 1-908-367-0440

Fax: 1-908-905-9279

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## MACWAREHOUSE 30-DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your MacWAREHOUSE Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return this product, postage paid, in its original condition, with the original packaging and documentation.

**ONE YEAR WARRANTY.** MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.

\* SIMMS prices vary. Call for latest information.

\*\* Limited Offer! Free video with purchase of 2 or more SIMMS.

MUC1P



**OVERNIGHT DELIVERY**  
**ONLY \$3.00**  
(See details below)

**GUARANTEE**

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.



**MacDraw II 1.1 (Claris)**  
Create a variety of graphics in addition to regular drawings. Use it for simple Desktop Publishing projects (flyers, invitations, business forms). Create illustrations, logos, and maps. Or design floor plans, landscapes, and products. MacDraw II prints everything from E size documents to color 35mm slides, and generates four-color separations. Comes with FREE MacPaint 2.0 and custom clip art. Also, FREE upgrade to MacDraw Pro. A \$349 value. **GRA 0118 \$289.**

**Smart Alarms 3.0 & Appointments Diary 3.1 (JAM Software)**

Let Smart Alarms and Appointment Diary take care of your daily schedule. Just enter your appointments into the diary, and let Smart Alarms remind you of the important events. With the Auto layout function, you can create custom diaries that display information in the format you prefer. New features include automatic backup, a snooze button, the ability to turn off alarms while using specified application (such as modem software), and a choice of beep options. Multi-User versions are compatible with LocalTalk, MacServe, TOPS, allShare, PSN and Apple Share. Single User: **DAC 0032 \$64.** 1-4 Users **DAC 0033 \$125.** 5-8 Users **DAC 0034 \$189.**



**ACCESSORIES**

<b>American Power Conversion</b>	
ACC0411 110 SE UPS	219
ACC0458 200DL UPS	159
ACC0451 370ci UPS	399
ACC0453 450AT UPS	349
ACC0454 520ES UPS	419
<b>Apple</b>	
ACC0335 Toner Cartridge - LaserWriter II	105
<b>Basic Needs, Inc.</b>	
ACC0356 Dust Cover - Mac II & Extended Keyboard (grey nylon)	12
ACC0348 HardTops ImageWriter II Cover	16
ACC0347 HardTops Mac Extended Keyboard Cover	15
ACC0345 HardTops Mac Plus Keyboard Cover	15
ACC0346 HardTops Mac Standard Keyboard Cover	15
ACC0466 MacIcx/ci Monitor Stand	47
ACC0351 Utility Pack	11
<b>B.A.S.F. (BASF)</b>	
MED0030 Disks - DS/HD 1.44 Meg (box of 10)	22
MED0041 Disks - Preformatted DS/DD (box of 10)	14
MED0040 Disks - Preformatted DS/HD (box of 10)	25
MED0029 Disks - DS/DD (box of 10)	12
<b>Curtis</b>	
ACC0469 Command Center	89
<b>Ergotron</b>	
ACC0344 MacTilt II - 13" Color RGB	75
ACC0128 MacTilt Plus/512 - Platinum	68
ACC0009 MacTilt SE, SE/030 - Platinum	68
<b>I/O Design, Inc.</b>	
ACC0028 MacLuggage Plus Carrying Case	64
ACC1070 MacLuggage SE Carrying Case	75
ACC0427 Ultimate SE Carrying Case - Black	79
ACC0440 Ultimate SE Carrying Case - Navy	79
Ultimate SE/Plus Neon Carry Cases	ea 89

**Kensington**

ACC0459 MacAccessories SE Radiation Anti-Glare Filter	52
ACC0097 System Saver Mac - Platinum	63
<b>Mobius Products</b>	
ACC0055 Fanny Mac QT	55
ACC0247 SE Silencer	39



**MacPro Plus (Key Tronic)**

Key Tronic's new MacPro Plus keyboard is compatible with all Macintosh computers. The enhanced 105-key layout includes Period/Comma lock capability, an interchangeable Caps Lock and Ctrl keys. Also, the connecting cable you need is offered at no extra charge. The keyboard is backed by a three-year warranty and unlimited toll-free product support. Includes offer for Tempo II, a keyboard macro package from Affinity Microsystems a \$149.95 value FREE! **INP 0083 \$118.**

**PowerUser™**

BND0013 PowerUser Carrying Case w/Free Cap	69
<b>Sony</b>	
MED0031 Disks - 1.44 Mb High Density (3.5)	24
MED0003 Disks - DS/DD (box of 10)	13
<b>Targus, Ltd.</b>	
ACC0251 Imagewriter II Carry Case (black)	45
ACC0438 MacIcx/ci Carrying Case - Black	75
ACC0252 MacPlus/SE Carrying Case (black)	55
ACC0250 MacPlus/SE - Ext Keyboard Carrying Case	69
ACC0482 Premier Leather Case	175

**WriteNow 2.2 with Grammatik 2.0 (T/Maker)**

NEW! WriteNow comes with Grammatik 2.0, a top grammar/style checker (a \$99.00 value-FREE). The two-time winner of the prestigious MacUser Eddy award, WriteNow features a 1.4 million word thesaurus, 135,000 word dictionary (the largest thesaurus/dictionary combination in the Macintosh world) and compatibility with Microsoft Word. In addition to being one of the most affordable, fastest and easiest Mac word processors available, WriteNow can still run on a floppy disk system. **WRD 0018 \$119.**



**ACCOUNTING & PERSONAL FINANCE**

<b>Aatrix Software</b>	
FIN0050 Checkwriter II 3.1	32
FIN0041 Payroll 3.5	109
FIN0113 Ultimate Payroll	189
<b>Absolute Solutions, Inc.</b>	
FIN0086 Computerized Classic Accounting	225
<b>Checkfree Corporation</b>	
FIN0088 CheckFree	21
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FIN0114 TurboTax Personal 1040	50

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**Access MF**

Offers the speed, convenience and advantages of both erasable and write-one operation. In both modes, it sorts data on a removable dual-sided optical disc cartridge with a capacity of 654 MB. **DRI 0252 \$3995.**

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FIN0044 ACC PAC Bedford Simply Accounting 1.1	225
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**Inman**

FIN0013 Business Sense 1.3	129
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**Intuit**

FIN0043 Quicken 1.5	35
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**Meca**

FIN0039 Andrew Tobias' Managing Your Money 3.0	135
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**Nolo Press**

BUS0133 For The Record 2.0	31
BUS0132 WillMaker 4.0	37

**Peachtree**

FIN0059 At Once!	285
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**Reality Technologies**

FIN0068 WealthBuilder (Mac)	145
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**Softsync/BLOC Publishing**

FIN0048 Accountant Inc. Professional	345
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**Softview**

FIN0090 iX Personal Tax Analyst	59
FIN0097 MacIntax 1040 - 90	59

**Telaware, Inc.**

FIN0087 M.Y.O.B. 2.0	145
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BUS0130 Arts & Leisure	49
BUS0107 Computer Science & Engineering	49
BUS0110 Education	49
BUS0108 Financing & Banking	49
BUS0109 Health Care	49
BUS0102 Manager Edition	49
BUS0103 Sales & Marketing Edition	49
BUS0087 ResumExpert (Word 3.0/4.0 version)	49
<b>Abacus Concepts</b>	
STA0008 StatView II 1.03	279
STA0010 StatView SE+Graphics 1.03	179

**Access CD & Access MF (Optical Access) Access CD**

Opens your Mac to the world of CD-ROM. Plays audio-only CDs and reads the new multi-mode CD-ROM formats. It has twin 50-pin SCSI connectors, a switch-selectable SCSI address, and an external SCSI terminator. Comes complete with cables, software, and manufacturer's two-year warranty. **DRI 0251 \$849.**





# FREE!

The fifth edition of Steven Bobker's *Power User's Tool Kit* is now available exclusively to MacWAREHOUSE customers. A hand-picked collection of four powerful programs on one handy disk, the newest *Tool Kit* includes *To Do!* — a unique desk accessory for organizing and implementing your daily tasks. The newest version of *StuffIt Classic*, also on the disk, will create freestanding space-saving archives of files that you can expand whenever you need them without having any special decompression software.

The **POWER USER'S TOOL KIT 5.0** is FREE from MacWAREHOUSE when you order from us. If you would like the disk, please ask for product code number AAA 0011. You pay only \$1.50 for shipping and handling. The programs are shareware, so you can try them free of charge. If you wish to continue using them, some authors ask that you pay a fee (\$10-\$25). All of the details are explained on the disk, which is yours to keep.



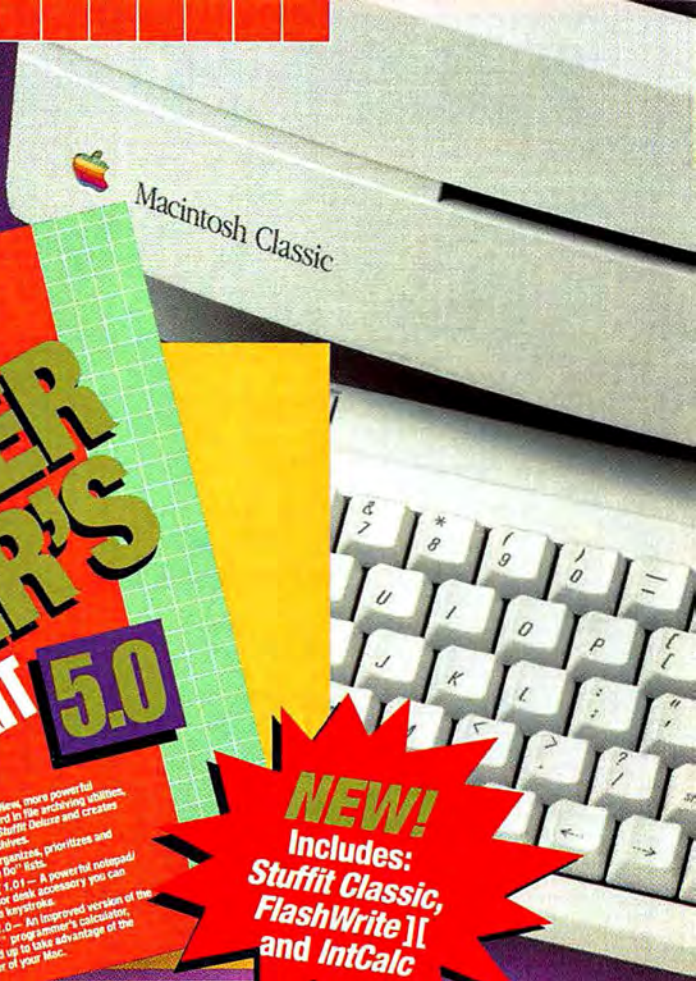
STEVEN BOBKER PRESENTS...

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- *StuffIt Classic 1.6* — New, more powerful version of the standard in file archiving, enables files from *StuffIt Deluxe* and creates self-unzipping archives.
- *To Do! 3.01* — Organize, prioritize and track your "To Do" list.
- *FlashWrite II 1.01* — A powerful notepad/ text processor desk accessory you can open with a keystroke.
- *IntCalc 1.0* — An improved version of the HP-11C — programmer's calculator, speeded up to take advantage of the power of your Mac.

MacWAREHOUSE

**NEW!**  
Includes:  
*StuffIt Classic*,  
*FlashWrite II*  
and *IntCalc*



### FREE CATALOG!

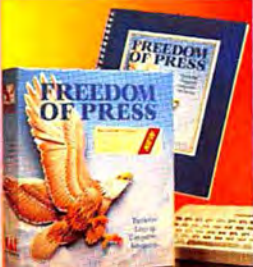
We carry more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. If you can't find what you need, just fill in the information requested below and we'll start your free, one-year subscription to the MacWAREHOUSE catalog.

#### Freedom of Press Light 3.0 (Custom Applications)

Now output to non-PostScript devices from applications such as PageMaker, Illustrator or Quark XPress. Freedom of Press Light supports such printers as the HP LaserJet II, IIP, III, DeskWriter and PaintJet as well as all Apple, GCC or HP QuickDraw printers. Includes 17 scalable, rotatable PostScript fonts and support for additional fonts including Adobe Type 1. Compatible with all Macs. **UTI 0185 \$56.**

#### Freedom of Press 3.0

Includes 35 fonts, supports more than 50 black and white and color printers. **UTI 0136 \$255.**



### MacInTax

#### MacInTax 1040-90 (Softview)

MacInTax 1040-90 guides you through the process of preparing your Federal or State taxes. Just type in the requested numbers and MacInTax does the rest. When finished, just print the completed return on your LaserWriter or Image Writer. If you used MacInTax in a previous year, 1990 will read those files and bring forward relevant items, saving time and reducing errors. Send in your MacInTax registration card and Softview will send you information about their annual updates. **FIN 0097 \$59.**

#### The "ULTIMATE" SE Carrying Case (I/O Design, Inc.)

The "ULTIMATE" SE Carrying Case is designed with the same high quality standards as other MacLuggage products. This case offers internal, padded compartments for ANY Macintosh keyboard, mouse, external hard disk and cables also holds the new Macintosh Classic. It also features 2 additional exterior pockets for everything from disks to umbrellas. Combine these features with sturdy Dupont Cordura nylon and 1/2 inch high density foam padding and you'll see why this is the "Ultimate" carrying case for your Mac. Available in black (**ACC 0427**) and navy blue (**ACC 0440**). **\$79.**



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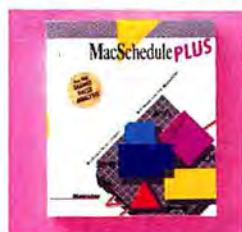
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# FROM MacWAREHOUSE



## MacSchedule PLUS

For bottom line project management, MacSchedule can help you create clear graphic schedules in minutes. Integrated spreadsheet and graphing functions enable you to tie data in scheduling tasks. Now features Earned Value Analysis! **GRA 0237 \$215.**



## VocabLearn/ce 2.0

Now makes studying a foreign language easier! New features include add/delete cards, type answers, import/export text files and creative user options which allows you to customize your VocabLearn/ce 2.0 stack. Over 1,500 cards. Available in seven languages and two levels. Free Hypercard 2.0 with each program. **\$35.**



## Stylist

Stylist lets you use the full power of Microsoft Word 4.0 by taking the mystery out of style sheets. Displays and prints style settings and samples in beautifully organized windows and reports. Includes auto-formatting templates and dictionary of computer terms. **WRD 0033 \$51.**



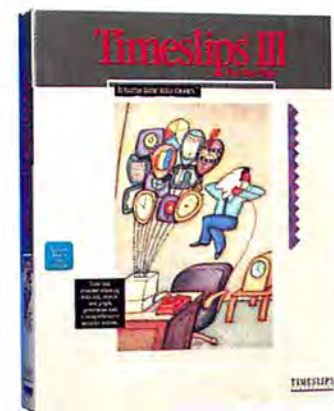
## 9600M Plus Modem

The Only V.32 Data Modem with fax capability. A 9600 Data Modem/9600 Send/Receive Group III Fax. Supports MNP-5 and V.42 error correction/MNP-5 data compression. Includes MacKNOWLEDGE™ software, fax software with many exclusive features, including grey scale support, plus a Mac cable. **MOD 0052 \$699.**

<b>FreeSoft</b>		
COM0060	White Knight 11	85.
<b>Insignia</b>		
UT0174	AccessPC	65.
COM0063	Soft PC AT/EGA Module	125
COM0045	SoftPC 1.3	245.
<b>International Business Software</b>		
NET0097	DataClub - 3 Pack	199.
NET0098	DataClub - 10 Pack	559.
<b>Microcom</b>		
NET0041	Carbon Copy Mac - single	117.
NET0088	Carbon Copy Mac - twin	189.
<b>Prodigy</b>		
COM0056	Prodigy Starter Kit for the Mac	27.
<b>Sitka</b>		
NET0056	InBox Plus 3.0	1299.
NET0057	DOSTOPS 3.0	165.
NET0049	MACTOPS 3.0	187.
<b>Software Ventures</b>		
COM0043	Microphone II 3.0	215.
<b>Traveling Software</b>		
NET0045	Lap-Link III - Connectivity Pac	99.

## DESKTOP PUBLISHING

<b>Aldus</b>		
DTP0056	Design Team	889.
DTP0045	PageMaker 4.0	499.
DTP0047	PrePrint	329.
<b>Letraset</b>		
FON0086	LetraStudio	275.
<b>Multi Ad Services</b>		
DTP0042	Multi Ad Creator 2.21	799.
<b>Quark, Inc.</b>		
DTP0028	QuarkStyle	189.
DTP0049	XPress 3.0	529.
<b>Silicon Beach</b>		
DTP0040	Personal Press	199.
<b>TimeWorks</b>		
DTP0048	Publish It! Easy 2.0	145.



## DISK DRIVES & BOARDS

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DRI0287	AE HD Mac Drive	245.
INF0148	QuadraLink	215.
<b>Computer Friends</b>		
GRA0251	ColorSnap 32 Plus	649.
<b>Cutting Edge</b>		
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DRI0157	20 meg Under the Mac Drive	339.
DRI0158	30+ meg Under the Mac Drive	399.
DRI0162	45 Mb Removable Hard Drive (Syquest)	699.
DRI0159	45+ meg Under the Mac Drive	449.
DRI0160	60+ meg Under the Mac Drive	489.
DRI0161	80+ meg Under the Mac Drive	539.
<b>Dayna Communications, Inc.</b>		
DRI0174	DaynaFile dual 360K (5 25) & 1 44 (3 5)	749.
DRI0104	DaynaFile single 360K (5 1/4)	525.
<b>Fujitsu</b>		
DRI0186	800K Disk Drive - Fujitsu	99.
<b>Kennet Technology</b>		
DRI0218	Drive 1200	259.
DRI0141	Drive 2.4	329.
DRI0219	Drive 360 (5 25 in floppy disk drive)	259.
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	Read-write/optical	
GRA0243	QuickImage 24 Video Frame Grabber - II 749.	
<b>Micron Technology</b>		
DRI0187	Xceed 8-bit Video Card NB6-48	349.
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DRI0294	Athena A100 100 Meg Drive	899.
DRI0293	Athena A50 50 Meg Drive	599.
DRI0311	Europa 100 Meg Drive	739.
DRI0308	Europa 20 Meg Drive	379.

## Kurta IS/ADB Graphics Tablets (Kurta)

A 200 dpi tablet that provides absolute positioning control, so you can create graphics quickly and easily. Its Menu Strip gives you 11 to 23 instant commands or macros. Its especially ideal for sketching, drafting, or freeform drawing. The Kurta Tablets work with most large screen monitors. Each tablet comes complete with the Cordless Cursor and Cordless Pen for maximum flexibility and convenience.  
**8.5x11 INP 0113 \$319.**  
**12x12 INP 0114 \$385.**  
**12x17 INP 0115 \$625.**



DRI0309	Europa 40 Meg Drive	419.
DRI0310	Europa 80 Meg Drive	599.
DRI0307	MicroTech R50 50 Meg Removable	979.
DRI0304	Nova N40 40 Meg Drive	565.
DRI0305	Nova N80 80 Meg Drive	745.
<b>Optical Access International</b>		
DRI0251	Access CD	849.
DRI0252	Access MF	3995.
MED0036	Access MF Rewritable Optical Cartridge	239.
<b>Peripheral Land, Inc.</b>		
DRI0193	Infinity Dual 40Mb Removable	1875.
DRI0115	Infinity Turbo 40 Meg Removable	799.
DRI0154	Turbo Floppy 1.4 Drive	359.
<b>PowerUser™</b>		
DRI0201	20 Meg External Hard Drive	329.

## Timeslips III 2.0 (TimeSlips Corp.)

Timeslips III is a complete time keeping and billing package for people whose stock in trade is their time. You gather time data with the TS Timer DA. When the time comes to send the bill, TS Report will extract the data and generate invoices and reports in a wide variety of formats. And Timeslips can handle the big jobs: 250 users, 250 different activities, and over 3,000 clients, with up to 128 projects per client. **BUS 0043 \$195**

DRI0202	30 Meg External Hard Drive	369.
DRI0206	44 Meg Removable	689.
DRI0203	45 Meg External Hard Drive	419.
DRI0204	60 Meg External Hard Drive	469.
DRI0205	80 Meg External Hard Drive	519.

## EDUCATIONAL & INSTRUCTIONAL

<b>Beacon Technology, Inc.</b>		
HYP0034	HyperBible International Version 2.0	129.
HYP0035	HyperBible King James Version 2.0	129.

## Gemini and Mercury Accelerators (Total Systems)

Premium Gemini Accelerators will let your Mac SE outperform a IIci! Recommended by both MacUser and MacWorld (August 1990). The Plus Kit adapts the board to a Plus, 512KE, even an old 128KE. Optional math coprocessor speeds up math functions. The new value priced Mercury line provides System 7 without a dead end! Modular design allows the addition of expansion modules. Coupon included for FREE copy of VIRTUAL. Full line available.

## Mercury/Plus

**DRI 0295 \$519.**

## Mercury/SE

**DRI 0297 \$389.**

**Gemini 20MHz**

**DRI 0301 \$799.**

**Gemini 25MHz DRI**

**0302 \$1039.**

**Plus Kit**

**DRI 0265 \$129.**

## Broderbund

EDU0170 The Playroom 29.

## Davidson & Associates

EDU0037 Math Blaster 29.

EDU0118 Math Blaster Mystery 29.

## Help Software, Inc.

EDU1008 Desktop Help for Excel 52.

## HyperGlot Software Company

Pronunciation Tutor w/ Sound

Chinese, French, German or Spanish ea. 39.

Tense Tutor.

French, German, Spanish or Italian ea. 39.

Verb Tutor w/ Sound.

French, German, Spanish or Italian ea. 39.

Word Torture: French, German, Italian.

Russian or Spanish ea. 29.

Easy Kana - Japanese 129.

KanjiMaster 105.

RefBase 105.

EDU0178 Russian - Verbal Aspect 42.

## Learning Company

EDU0084 Math Rabbit 30.

EDU0048 Reader Rabbit 2.0 30.

## MicroMaps

GRA0229 MapArt PICT Format 99.

GRA0228 MapArt EPS Format 99.

## Nordic Software

EDU0142 MacKids Preschool Pack 36.

## Penton Overseas (Full line available)

VocabLearn Level I or II: French, German, Italian, Japanese, Russian or Spanish ea. 35.

## Visionary Software

EDU0207 LifeGuard 49.

EDU0209 Synchronicity 2.5 49.

## Voice & Video

Getting Started Video: Excel 2.2, PageMaker 4.0, Word 4.0 ea. 39.

Advanced Techniques Video: Excel 2.2, PageMaker 4.0, Word 4.0 ea. 39.

EDU0063 HyperCard Getting Started Video 39.

## Zondervan Publishing House

BOK0022 MacBible - Greek 99.

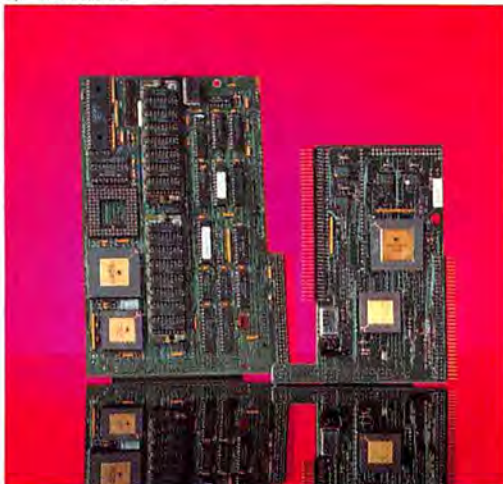
BOK0021 MacBible - King James Version 59.

BOK0020 MacBible - New International Version 59.

## ENTERTAINMENT

### Artworx

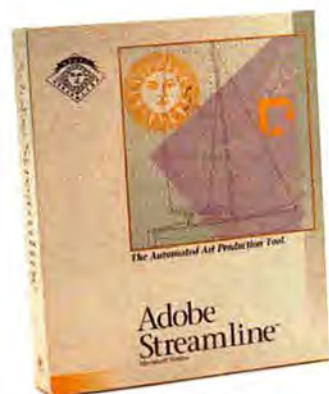
ENT0303 Bridge 6.0 29.





# MORE FOR YOUR MONEY...

STA0023	SuperANOVA (Mac Plus, SE, Portable)	309
STA0022	SuperANOVA (MacII Family)	309
<b>Abbott Systems, Inc.</b>		
BUS0131	Cheshire 1.0	63
<b>Acus</b>		
DAT0045	4th Dimension 2.1	489
<b>AEC Management Systems</b>		
BUS0129	FastTrack Schedule 1.5	139
DAT0055	AEC Information Manager	409
<b>Aldus</b>		
BUS0066	Persuasion 2.0	329
<b>ASD Software, Inc.</b>		
BUS0134	Planisort	199
BUS0146	Planisort - 5 pack	579
BUS0147	Planisort - 10 pack	839
<b>Ashton-Tate</b>		
DAT0042	dBase Mac	SPECIAL! 59.
BUS0054	Full Impact 1.1	SPECIAL! 59.
<b>Avery</b>		
ACC0489	MacLabelPro	49
<b>Baseline Publishing</b>		
BUS0149	1 Shot Worksheet	59
<b>Casady &amp; Greene, Inc.</b>		
DAC0010	QuickDex	34
<b>CE Software</b>		
BUS0135	Alarming Events	85
GRA0070	CalendarMaker 3.0	31
<b>Claris</b>		
DAT0064	FileMaker Pro	218
BUS0058	MacProject II 2.1	365
BUS0065	SmartForm Designer	289
<b>DeltaPoint, Inc.</b>		
BUS0099	DeltaGraph 1.5	109
<b>Fox Software</b>		
DAT0047	FoxBase+/Mac 2.0	292



**Adobe Streamline 2.0 (Adobe)**  
Streamlines the art production process. Automatically convert a bitmapped or grayscale file into line art up to 90% smaller than the original. Save the converted image as an Encapsulated PostScript file and place the art into your page layout or enhance or manipulate the image in Adobe Illustrator or another drawing package. New features allow you to convert grayscale image, like photographs, into posterized line art. A Separate Shapes option allows you to easily edit individual shapes in your drawing application. Will even straighten out the lines when converting forms or technical illustrations that have been scanned in at an angle and much more. Product available mid-February. **GRA 0125 \$119.**

<b>Informix</b>		
BUS0064	WingZ 1.1	245
<b>JAM Software</b>		
DAC0033	Smart Alarms 3.0 (1-4 users)	125
DAC0034	Smart Alarms 3.0 (5-8 users)	189
DAC0032	Smart Alarms 3.0 (Single User)	64
<b>Kaetron</b>		
BUS0100	TopDown 2.0	229
<b>Mainstay</b>		
GRA0100	MacSchedule 2.5	139
GRA0237	MacSchedule PLUS	215
<b>Microlytics</b>		
DAC0031	Inside Information	69
<b>Microsoft</b>		
BUS0003	Excel 2.2	245
BUS0008	PowerPoint 2.01	245
BUS0088	The Microsoft Office	529
BUS0014	Works 2.0	179
<b>Portfolio Systems</b>		
BUS0101	Dynodex - The Instant Address Book	75
DTP0055	Dynodex	57

## 110SE UPS and PowerChute for AppleShare (American Power Conversion) 110SE UPS

Fits neatly under your Mac and provides up to twenty minutes of clean power. Its built-in rechargeable battery prevents data loss and equipment damage during momentary outages and brownouts. During normal operation, it protects against surges, spikes and power line noise. **ACC 0411 \$219.**  
**PowerChute for AppleShare**  
Automatically shuts down your AppleShare network when the power fails. It communicates with a signalling American Power Conversion UPS. Uses a piggyback cable so it does not need its own LocalTalk connector. **UTI 0133 \$69.**



## CD-ROM

<b>EDUCORP</b>		
CDR0006	EDUCORP CD-ROM 4.0	159
CDR0003	EDUCORP Clip Art CD	45
EDU0198	Lingua-ROM	399
<b>Wayzata Technology</b>		
EDU0194	The World Fact Book	79
<b>NEC</b>		
CDR0002	NEC Interface Kit	72
GRA0212	Photo Gallery	246
CDR0001	Intersect CDR-35 Reader	399
<b>Microsoft</b>		
BUS0019	The Microsoft Office CD-ROM	599

## COMMUNICATIONS & NETWORKING

<b>Caravelle Networks Corporation</b>		
NET0100	Mac to Mac - 10 pack	229
NET 0099	Mac to Mac - 5 pack	165
NET0101	Mac to Mac - 50 pack	979
<b>CE Software</b>		
COM0054	In/Out (5 user Pak)	128
COM0041	QuickMail 2.2 (1 - 10 users)	315
<b>CompuServe</b>		
COM0040	Navigator 3.0	49
<b>DataViz</b>		
COM0001	MacLink Plus / PC 4.5	117
COM0052	MacLink Plus / Translators 4.5	98
<b>Dayna Communications, Inc.</b>		
UTI0116	DOS Mounter	55
<b>Farallon™ Computing</b>		
COM0078	Liaison 3.0	267
NET0005	PhoneNET® 128/512	35
NET0084	PhoneNET® Manager's Pack	669
NET0007	PhoneNET® Plus, SE & II	33
NET0040	PhoneNET® Plus, SE & II - 10 Pack	219
NET0019	PhoneNET StarController®	825
NET0059	StarController™EN (EtherNet)	1629
NET0058	Timbuktu® 2.0 - Remote Access Pack	845
NET0038	Timbuktu® 3.1	95
NET0034	Timbuktu Remote® 2.0	123



## White Knight V.11

Communications software includes a reworked user interface with completely reorganized menus and enhanced terminal support including support for the VT-102. Get a free subscription to GENIE and a free copy of Oktyo with each copy of White Knight. **COM 0060 \$85.**



## Business Sense

All time favorite Macintosh accounting package for small business. Business Sense was designed exclusively for the Mac and is easy to learn and use. All the Major accounting functions such as GL, AR, AP, Payroll, and Sales Invoicing are integrated on a single disk. **FIN 0013 \$129.**



## FastLabel 2.0

Stick it to the chore of simple label printing in three easy steps! Import addresses, lists and graphics then use FastLabel's preformatted templates (or create your own) to produce everything from disk, VCR, and cassette labels to name badges, signs and more. **BUS 0105 \$45.**



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Revolutionize the way you study the Scriptures. For students, pastors, and scholars. Includes a flexible word-and-phrase search mode, a verse mode for displaying any range of verses, and a count mode for showing statistical information. **BOK 0020 \$59.**

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## Rival Monitors

**(MegaGraphics Display System)**  
MegaGraphics Large Screen Monitor Systems include both the interface card and the monitor. Choose monochrome, gray scale, 8 or 24-bit color. All monitors include an ergonomically designed tilt/swivel stand. The systems operate at a high refresh rate (69 to 75 Hz) to deliver a stable, flicker-free image, with a 75 dpi resolution (1024 X 826 pixels). All come with the manufacturer's one-year warranty (extended warranties available through the manufacturer at extra cost). **Starting at \$1269.**

## Baseline Publishing

ENT0351 Talking Moose ..... 23

## Broderbund

ENT0259 Shufflepuck Cafe ..... 25

Where's Carmen Sandiego? ..... ea 29

## Bulls City Software

ENT0308 Moriarty's Revenge ..... 35

## Bullseye

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ENT0046 Fokker Triplane Flight Simulator 2.6 ..... 23

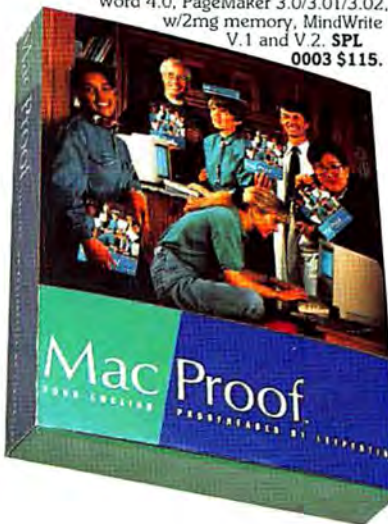
ENT0261 P51 Mustang 2.80 ..... 35

## Centron Software, Inc.

ENT0329 Blackjack Strategy Tester (w/ Blackjack Ace) ..... 65

## MacProof 3.2.1 (Lexpertise)

You'll never get a second chance to make a first impression! MacProof 3.2.1 is your English proofreader. Without leaving your document, it proofreads all text written on your word processor: business, educational, personal and professional. MacProof is a desk accessory for the Macintosh Plus, SE, II and IIfx. It checks mechanics, word usage, writing style and structure. You can customize the usage and spelling dictionaries to your specific requirements. Compatible with MacWrite II V. 1.0, MacWrite V. 4.6 & 5.0, Microsoft Word 4.0, PageMaker 3.0/3.01/3.02, w/2mg memory, MindWrite V.1 and V.2. **SPL 0003 \$115.**



ENT0257	CrapsMaster	27
ENT0264	BlackJack Ace	27
ENT0289	CasinoMaster Deluxe Mac II Version	55
ENT0277	CasinoMaster (Plus/SE)	49

## Electronic Arts

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ENT0096 Wizardry ..... 25

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## Spectrum HoloByte

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ENT0528 Welltris ..... 20

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ENT0278 Life & Death ..... 32

ENT0269 The Hunt For Red October ..... 20

## Three-Sixty

ENT0323 Sands of Fire ..... 32

## Toyogo

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ENT0326 Nemesis Deluxe ..... 99

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ENT0330 MacSki ..... 40

ENT0212 NFL Challenge ..... 55

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Tactic Software		
FON0265	ArtFonts	50
TeleTypeSetting		
FON0343	T-Script	92
FON0357	T-Script Basic	55

## GRAPHICS & MULTIMEDIA

### 3G Graphics

GRA0188 Images with Impact! Accents & Borders 1 ..... 65

GRA0111 Images with Impact! Business 1 ..... 65

GRA0089 Images with Impact! Graphics ..... 50

### Adobe Systems, Inc.

DTP0054 Illustrator 3.0 (w/ ATM 2.0) ..... 349

GRA0125 Streamline ..... 119

GRA0191 PhotoShop ..... 499

### Aldus

GRA0090 Freehand 2.02 ..... 329

### Baseline Publishing

GRA0242 Color MacCHEESE ..... 59

### Bright Star Tech, Inc.

GRA0161 InterFACE ..... 249

### Claris

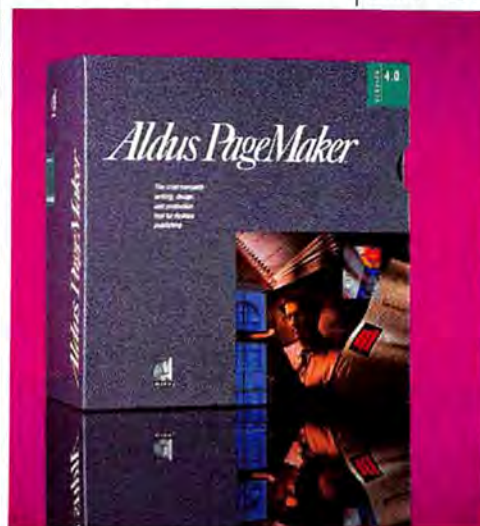
CAD0029 ClarisCAD 2.0 ..... 649

GRA0118 MacDraw II ..... 289

GRA0117 MacPaint 2.0 ..... 92

## Aldus PageMaker 4.0 (Aldus)

Offers significant improvements in every area from the User Interface, Page Composition, Document Formatting, Text Handling, Typography, Graphics and Color, to Printing. The Story Editor has complete word processing capabilities, including search and replace by characters, fonts, point sizes, or paragraph styles, and a spelling checker with hyphenation. New typographic controls improve page appearance. Handles book length documents, generates tables of contents and links graphic elements with related text. **DTP 0045 \$499.**



## FONTS & APPLICATIONS

### Adobe Systems, Inc.

FON0264 Adobe Type Manager 2.0 ..... 55

FON0278 Adobe Type Manager Plus Pack ..... 109

Adobe Type Set 1 or 2 ..... ea 58

FON0326 Adobe Type Set 3 ..... 129

Smart Art I, II, III or IV ..... ea 59

DAC0028 TypeAlign ..... 59

FON0295 Adobe Type Reunion ..... 38

### Altsys

FON0183 Art Importer 2.0 ..... 95

FON0014 Fontographer 3.2 ..... 275

FON0284 Metamorphosis 1.5 ..... 95

### Broderbund

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### Dubl-Click

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### Pacific Data Products

INPC138 Pacific MacPage ..... 425

### Color MacCheese, INIT Manager and 1 Shot Worksheet (Baseline)

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Ideal for estimating, proposals, and amortization schedules. Combines a powerful forms generator and the mathematical capabilities of a spreadsheet to save time and money. **BUS 0149 \$59.**

### Creative Software

GRA0240 Easy Color Paint 2.0 ..... 47

### Deneba Software

GRA0075 Canvas 2.1 ..... 189

GRA0187 UltraPaint ..... 125

### Dream Maker

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GRA0124 Clippures Vol 2 Business Images ..... 69

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GRA0101 MacGallery (Hypercard version) ..... 27

GRA0102 MacGallery (MacPaint version) ..... 27

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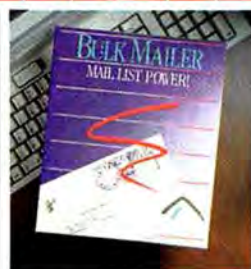
### Graphsoft

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CAD0030 MiniCAD+ 3.0 ..... 595

### Innovative Data Design

CAD0028 MacDraft 2.0 ..... 193



## BulkMailer 3.2.5

The ideal mail list management system. Contains duplication elimination, various sorting capabilities and search codes. Can utilize all fonts and styles, mail merge, envelope printing, plus much more. Works great with Canadian postal codes and other international mailing requirements. **BUS 0025 \$75.**



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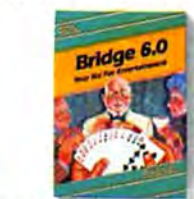
### MacPrint 1.2

Print Mac documents on your HP LaserJet or LaserJet IID. Handles all HP internal and cartridge fonts. Low-res graphics and high-res text on the same page. Cable included. **UTI 0098 \$95**.



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Play a rubber of Bridge 6.0 with the Mac's three players. Bid with either the Stayman or Blackwood conventions. Bridge 6.0 handles all the bookkeeping and tactfully informs you of any mistakes in bidding or play. It saves hands for later replaying and analysis. **ENT 0303 \$29**.

GRA0104	Dreams 1.1	349.
<b>Letraset</b>		
GRA0151	ColorStudio	649.
DTP0019	ImageStudio 1.5	139.
<b>MacroMind</b>		
GRA0140	MacroMind Director 2.0	439.
<b>Metro Image Base</b>		
	Full Line Available	ea. 85.
<b>MicroFrontier</b>		
GRA0215	Enhance	239.
<b>Paracomp</b>		
GRA0235	FilmMaker	439.
GRA0233	Swivel 3D Professional	439.
GRA0234	SwivelArt	82.
<b>Preferred Publishers</b>		
GRA0239	Master Color	99.
GRA0238	Master Paint	50.



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<b>Silicon Beach</b>		
GRA0092	Digital Darkroom 2.0	259.
GRA0131	Super 3D 2.1	339.
HYP0027	SuperCard 1.5	205.
GRA0112	SuperPaint 2.0	135.
<b>Solutions, Inc.</b>		
DAC0002	SmartScrap & The Clipper 2.01	56.
<b>Strata</b>		
GRA0176	StrataVision 3D	375.
<b>Strategic Mapping, Inc.</b>		
GRA0227	Atlas MapMaker 4.5	369.
<b>Studiotechnics</b>		
GRA0189	Colorset 1.5	229.
<b>SuperMac</b>		
GRA0109	PixelPaint 2.0	225.
GRA0249	PixelPaint Professional 2.0	465.
<b>Tactic Software</b>		
GRA0110	ArtClips 1st Edition	51.
GRA0160	ArtClips 2nd Edition	65.
DAC0011	Icon-It! 2.1	45.
<b>T/Maker Co.</b>		
GRA0209	ClickArt Business Cartoon	33.
GRA0039	ClickArt Business Image	32.
GRA0088	ClickArt EPS Illustrations	82.
<b>Zedcor</b>		
GRA0199	DeskPaint 3.3	115.

## HARDWARE & PERIPHERALS

<b>Aura Systems</b>		
DR10220	ScuzzyGraph	729.
<b>Caere</b>		
INP0143	Typist	479.
<b>CoStar</b>		
INP0091	LabelWriter	185.
<b>Hewlett Packard</b>		
INP0096	HP DeskWriter - 2279A	759.
<b>MegaGraphics</b>		
MON0015	8-bit 19" Hi-Res Greyscale for Mac II	1879.
MON0016	8-bit 19" Hi-Res Greyscale for SE/030	1899.
MON0006	Rival System for Mac II	1269.
MON0008	Rival System for Mac SE	1269.
MON0007	Rival System for Mac SE/30	1269.
<b>Seikosha</b>		
INP0041	Seikosha SP 2000 AP Printer	235.
<b>Sharp</b>		
COMP007	Wizard OZ 7000 (32KRam)	229.
COMP018	Wizard OZ 7200 (64KRam)	255.
<b>ThunderWare</b>		
INP0116	LightningScan 400	385.
INP0007	ThunderScan Plus	199.

## INPUT & OUTPUT

<b>Calcomp</b>		
INP0102	The Wiz Pen	57.
INP0098	The Wiz Tablet	159.
<b>CH Products</b>		
INP0121	RollerMouse ADB	75.
<b>Datadesk International</b>		
INP0097	DataDesk Switchboard	159.
INP0047	Mac 101 Keyboard SE/II	129.
<b>Digital Vision, Inc.</b>		
GRA0145	Computer Eyes B & W	199.
GRA0154	Computer Eyes For Mac-Color	349.
<b>Kensington</b>		
NP0059	Turbo Mouse	109.
INP0060	Turbo Mouse ADB (SE or II)	109.
<b>Key Tronic</b>		
INP0083	Key Tronic Mac Pro Keyboard	118.
<b>Koala</b>		
INP0127	MacVision 3.0	269.

### MacPlus/SE - with Extended Keyboard Carrying Case (Targus)

Pamper your Mac with a Targus case made of Zilecone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection.

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Full Mac line available in black. Some styles available in blue, burgundy, and platinum. Premier Leather Case now available (black) **ACC 0482 \$175**.

<b>Kraft</b>		
INP0064	ADB Joystick Premium II (Mac SE & II)	29.
INP0094	Kraft ADB Trackball	79.
<b>Kurta</b>		
INP0113	IS/ADB Tablet 6 1/2 x 11	319.
INP0114	IS/ADB Tablet 12 x 12	385.
INP0115	IS/ADB Tablet 12 x 17	625.
<b>Microspeed</b>		
INP0126	MacTRAC ADB	75.
INP0140	MacTRAC DB9	62.
<b>MicroTouch</b>		
INP0084	The UnMouse	189.
<b>Mouse Systems</b>		
INP0132	Little Mouse ADB	75.
INP0134	Trackball / ADB	69.

## MEMORY UPGRADES & ACCELERATORS

1 MEG SIMMS Low profile, 100ns, High Quality	59
<b>Daystar Digital</b>	
DR10224	FastCache IIci ..... 289
DR10288	PowerCache - 40 MHz (Ici) ..... 1015
DR10290	PowerCache - 50 MHz (Ici) ..... 1795
	PowerCard 030 ..... starting at 1324



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(Chipsoft)

TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. **FIN 0114 \$50**.

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DR10198	MaraThon 030 - (Mac SE) w/ Virtual	529.
DR10197	MaraThon 030 - (MacPlus) w/Virtual	529.
DR10152	MaraThon 030X (MacIIx) w/ Virtual	529.
DR10151	MaraThon 030-SE/030 w/ Virtual	529.

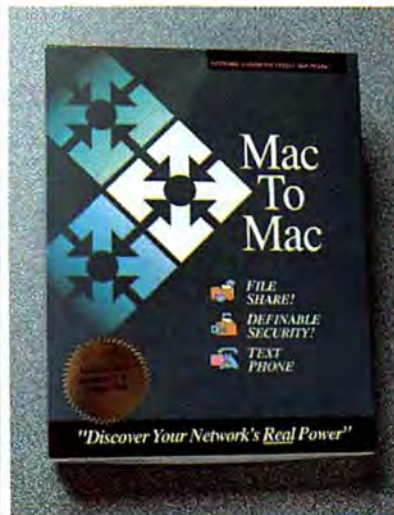
### Micron Technology

DR10321	PicturePress Card (Xceed ICDP-II)	745.
<b>MicroTech International, Inc.</b>		
CHP0025	Mac Classic 1 Meg Upgrade	99.
CHP0026	Mac Classic 3 Meg Upgrade	175.
DR10315	Mac Classic Upgrade Kit 20-1	399.

### Mac-to-Mac

(Caravelle Networks Corporation)

Mac-to-Mac offers direct file transfers over any AppleTalk network, including multiple zones, without a server. Increases workgroup productivity by allowing Macs on a network to quickly and simply send or retrieve files to and from one another. All smoothly in the background without disruptions. Excellent security options, transaction log. User list automatically maintained. Easy to learn and use. Also, provides two-way text conferencing and answering machine capabilities. (networking). User 5 pack **NET 0090 \$165**. User 10 pack **NET 0100 \$229**. User 50 pack **NET 0101 \$979**.





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## MUSIC & SOUND

<b>Altech Systems</b>	
MUS0032 ALTECH MIDI Interface	59.
<b>Coda Music Software</b>	
MUS0044 Finale 2.5	
<b>Electronic Arts</b>	
MUS0004 Deluxe Music Construction 2.5	85.
<b>Farallon™ Computing</b>	
MUS0036 MacRecorder® 2.0	159.
<b>Tactic Software</b>	
Sound Clips Vol. 1, 2, 3 & 4	ea. 49.



## SECURITY & VIRUS PROTECTION

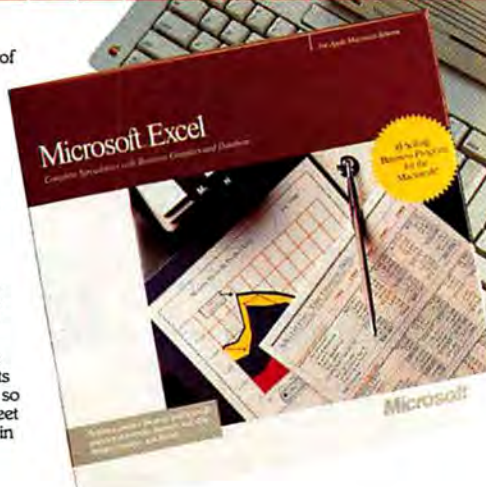
<b>ASD Software, Inc.</b>	
UTI0135 FileGuard 2.5	139.
UTI0131 FileGuard 2.5 - Office Pack 10	579.
UTI0130 FileGuard 2.5 - Office Pack 5	349.
<b>Fifth Generation System</b>	
UTI0120 DiskLock	118.
<b>Kensington</b>	
ACC0235 Apple Security Kit	34.
PassProof	70.
<b>Kent Marsh</b>	
UTI0028 MacSafe II	107.
UTI0064 NightWatch 1.03	86.

### Bookends 1.2 and Sensible Grammar (Sensible Software)

**Bookends 1.2**  
Automates the process of tracking information in books and magazines. Just select authors, journals, and keywords from your Hypercard list instead of retyping them. Imports tab delimited text files from dial-up services. **WRD 0023 \$51.**  
**Sensible Grammar**  
Now runs 70% faster than before. Say goodbye to mismatched subject and verb forms, awkward language, non-standard punctuation, long sentences and paragraphs, and other errors that weaken your writing. Works with MS Word, Write, Works, WordPerfect, WriteNow, and MacWrite. **SPL 0018 \$51.**

### Microsoft Excel 2.2 (Microsoft)

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### Microcom

UTI0150 Virex 10-pack	359.
UTI0093 Virex 2.9	59.
<b>Symantec Corporation</b>	
UTI0149 Symantec Antivirus for the Mac 2.0 (SAM) 67.	

## UTILITIES & PROGRAMMING

### Abbott Systems, Inc.

UTI0113 CanOpener	64.
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### SmartOne 2400/1200 (Best Data Products)

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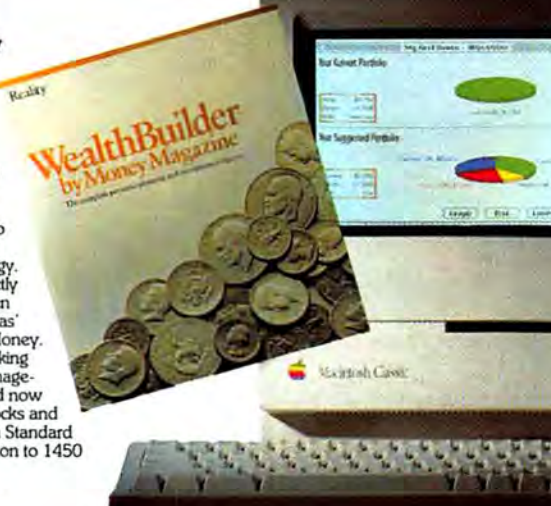
in non-volatile memory. Includes free Quicklink II communications software, modem, cable, and **CompuServe/Prodigy Start-Up Kit** offer. **MOD 0021 \$139.**

### Aladdin Systems

UTI0145 StuffIt Deluxe	63.
UTI0132 DiskExpress II 2.04 w/MultiDisk	57.
UTI0110 MasterJuggler 1.5	57.

### WealthBuilder by

**Money Magazine  
(Reality Technology)**  
WealthBuilder uses your financial data and your decisions about goals and acceptable risks to calculate the best investment strategy. It reads data directly from both Quicken and Andrew Tobias' Managing Your Money. It has a stock tracking and portfolio management system, and now includes 5000 stocks and 5000 bonds from Standard & Poor's, in addition to 1450 mutual funds. **FIN 0068 \$145.**



### American Power Conversion

UTI0133 Power Chute	69.
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### Baseline Publishing

UTI0186 ExpressTape	59.
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### UTI0187 INIT Manager

UTI0187 INIT Manager	35.
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### Berkeley System Design

UTI0119 Alter Dark 2.0	24.
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### CE Software

UTI0188 QuickKeys 2 v.2	99.
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### Custom Applications

UTI0136 Freedom of Press 3.0	255.
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UTI0185 Freedom of Press Light 3.0	56.
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### Dantz Development

UTI0118 Retrospect	148.
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### Digital, Inc.

LNG0036 Smalltalk/V MAC	125.
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### Dubl-Click

UTI0194 ClickChange	41.
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### Fifth Generation Systems

UTI0063 FastBack II 2.5	118.
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UTI0087 SuitCase II 1.2	49.
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UTI0035 SuperLaserSpool 2.02-Single User	93.
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### ICOM Simulations, Inc.

UTI0084 On Cue	35.
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### Insight Development

UTI0098 MacPrint 1.2	95.
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### Magic Software

UTI0077 Autosave II	28.
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UTI0126 BackMatic 1.1	50.
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### Mainstay

UTI0073 Capture 3.0	45.
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UTI0004 MacFlow 3.1	125.
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### Microcom

UTI0191 Microcom 911 Utilities	89.
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### Microsoft

LNG0030 QuickBASIC	64.
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### Multi Ad Services

UTI0199 Multi Ad Search	125.
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### Now Software

UTI0167 Now Utilities 2.0	79.
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UTI0168 Screen Locker	45.
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## ON Technology

UTI0142 ON Location ..... 75.

## Preferred Publishers

UTI0190 Personality ..... 53.

UTI0183 ScreenShot ..... 31.

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UTI0179 DiskDoubler ..... 45.

**Shana Corporation**

LNG0037 Inside Out ..... 369.

**Symantec Corporation**

UTI0151 Norton Utilities for the Mac ..... 89.

UTI0078 Symantec Utilities for Macintosh II (SUM) 99

LNG0001 THINK's C 4.0 ..... 165.

LNG0002 THINK's Pascal 3.0 ..... 165.

**The HandOff Corporation**

UTI0148 HandOff II ..... 52.

## Caere

UTI0164 OmniDraft ..... 69.

UTI0100 OmniPage 2.1 ..... 539.

UTI0163 OmniSpell ..... 69.

## Claris

WRD 0026 MacWrite II ..... 142.

## Deneba Software

SPL0015 Spelling Coach Pro. 3.1 ..... 124.

## Lexpertise

SPL0003 MacProol 3.2.1 ..... 115.

## LifeTree Software

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LNG0031 ZBasic 5.0 ..... 99.

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**Ashton-Tate**

WRD0009 FullWrite Professional V1.1 . SPECIALI 59.

## RightSoft

WRD0031 RightWriter ..... 55.

## Sensible Software

WRD0023 BookEncs 1.2 ..... 51.

SPL0018 Sensible Grammar ..... 51.

## SNA, Inc.

WRD0033 StylisT ..... 51.

## Tactic Software

WRD0030 Magic Typist ..... 49.

## T/Maker Co.

WRD0018 WriteNow 2.2 ..... 119.

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*Is Bitstream Swiss the same typeface as Adobe Helvetica? Now you can find out for sure. Version 2 of the Bitstream Typeface Library includes Analogue, a DA that cross-references all known names for a particular font. Cool. Bitstream's updated library also improves screen legibility, naming conventions, ATM compatibility, and family linking problems — and yes, the fonts are now hinted according to Type 1 specs.*

**By Aileen Abernathy**

**Eddy watch, DTP edition:** OK, you now know the winners of the 1990 Eddy Awards. But what's in store for 1991? Here are my current picks (but ask me again next week). ♦♦ **Page layout:** QuarkXPress 3.x or FrameMaker 1.x. Then again, there's Personal Press. ♦♦ **Typography:** A product that creates, converts, or otherwise deals with TrueType (assuming, of course, that TT still exists by then . . .). ♦♦ **Drawing:** FreeHand 3.0. No contest. ♦♦ **Painting:** Oasis, the early favorite, or PixelPaint Professional 2.0. ♦♦ **Image retouching:** Digital Darkroom 2.0 looks good, but competition in this category is heating up and Photoshop, the heavyweight, should have a new rev out. ♦♦ **Utility:** Multi-Ad Search, a very slick art-cataloging program that should put Curator into a body bag. ♦♦ **No-show:** Ventura Publisher, Mac Edition (following in PageMaker 4.0's footsteps).

**Printer evolution:** A couple of years ago, you had but two choices for desktop-color proofing. Now a score of color printers are crowding the market, and the second generation is taking wing. ♦♦ Tektronix, maker of one of those pioneering printers, has introduced the Phaser II series, six thermal wax printers that are smaller and lighter than its current models, modular (for easy upgrades), and networkable. These 300-dpi printers range from the low-end IISX (\$4,995) — a thermal wax bargain that relies on the Macintosh for image processing — to the IIPXN (\$10,995), which offers such features as multiple interfaces (including Ethernet), PostScript compatibility, and Pantone certification.

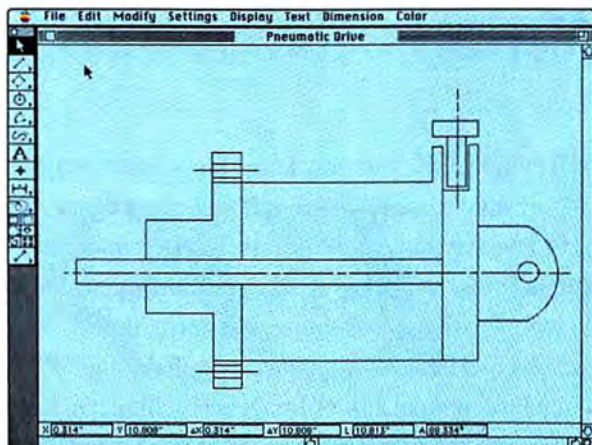


**Product news:** Yet another entry in the burgeoning low end of the page-layout market, RagTime Classic (\$195) is targeted at users of low-end Macintoshes. RagTime (the company) hopes this strategy will finally make the integrated page-layout, spreadsheet, and word-processing package the hot seller here that RagTime 3 is in Europe. ♦♦ The Santa Fe Collection (\$79.95) offers well-drawn clip art based on designs of Native Americans of the Southwest. The 600 images and 140 borders are in MacPaint format. Contact RT Computer Graphics at (800) 245-7824. ♦♦ The *Linotronic Imaging Handbook* (Torrance, California: Micro Publishing Press) is the first practical guide to using the ubiquitous-but-temperamental Lino. Authors James Cavuoto and Stephen Beale focus on desktop-publishing needs and have the official okey-doke from Linotype. ♦♦ *MacArtist* is a monthly newsletter for (you guessed it) Macintosh artists that has a hands-on focus. Write P.O. Box 10072, Costa Mesa, CA 92627. ☐

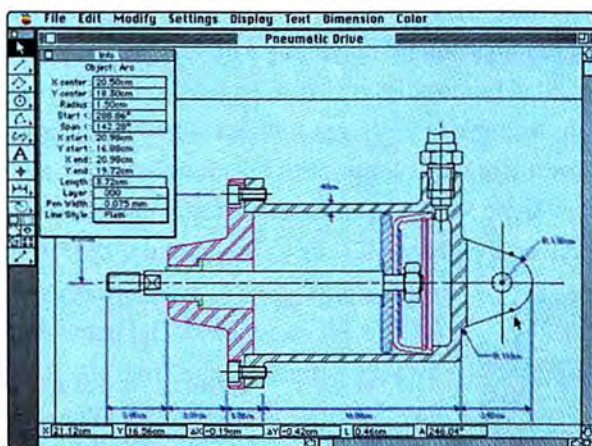




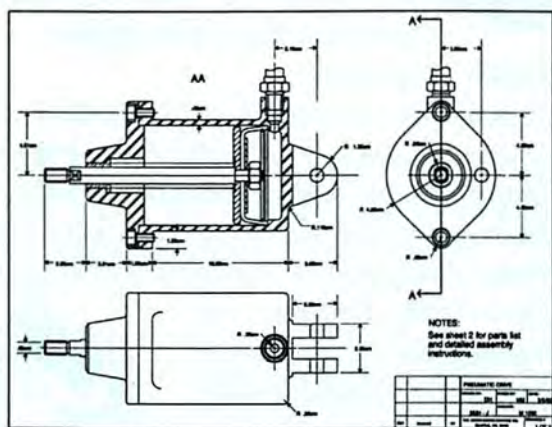
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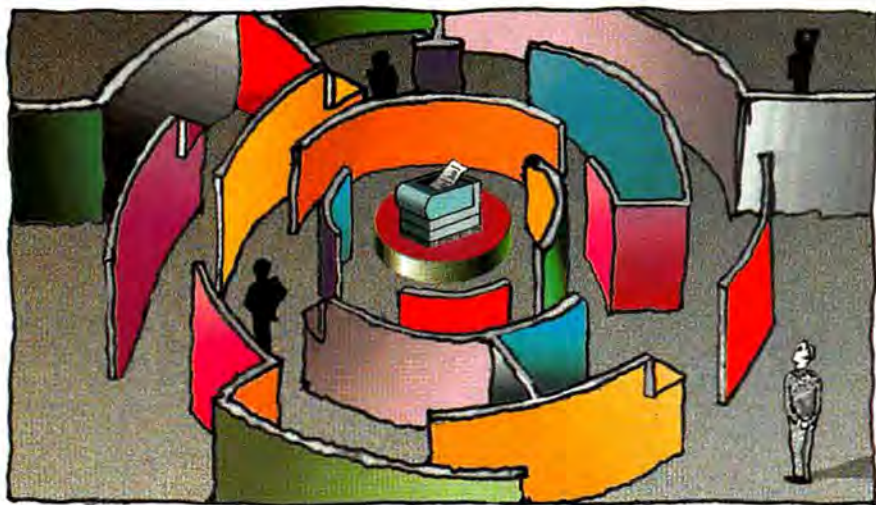
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# The Paper Trail

*A laser printer puts special demands on paper. Here's how — and where — to get the best paper for your printer.*

**By Daniel J. Rosenbaum**



**L**aser printers put special demands on paper. The paper has to withstand high temperatures, tortuous turns through the printer, and pressure from rollers. Its surface has to be smooth enough to let toner adhere without flaking or cracking, and the paper itself must have a good crisp feel to it.

Papers differ in more ways than weight, color, and size. When choosing paper for your laser printer, you should also consider the paper's brightness, opacity, and smoothness. Brightness, measured on a scale of 0 to 100 percent, indicates how much light is reflected from it. Pure-white paper should have a brightness level of (or close to) 100 percent. Opacity, also measured in percentage points, describes how much the printing shows through on the paper's other side — important if you're doing double-sided printing. Watermarked paper has a design embedded into it that can be seen if you hold the paper up to the light.

A paper's smoothness is indicated by a Sheffield rating — the higher the rating, the smoother the paper. Most paper falls between 75 and 300. Typical copy-machine paper has a smoothness of about 175, and good laser-printer paper checks in at about 350. Toner adheres better to smooth paper, but you might select a rougher finish to achieve an aesthetic effect. A smooth paper is usually described as having a *wove* finish; a *laid* finish is a textured, ribbed effect.

Paper is also classified by weight and fiber content. As you might expect, a heavier paper feels more substantial. To say that a paper weighs 24 pounds means that 500 17-x-24-inch sheets weigh 24 pounds. If you're looking for durable paper, choose one with a cotton rag

content. At least 25 percent of this kind of paper is cotton-fiber pulp.

Not all laser papers are appropriate for all purposes. Crane Crest (Crane & Co.) is fine for correspondence, but its off-white color rules it out for printing camera-ready copy. On the other hand, Laseredge HR-50 (CG Graphic Arts Supply) is great for camera-ready art, but it's too heavy and expensive for casual use (about \$30 for 250 sheets). Also, unless you'll be using them for paste-up, avoid papers with "wax holdout." One side of this type of paper is specially treated to hold wax, and that side is often a different color from the side you're supposed to print on.

The prices in Table 1 are approximate — costs vary, depending on your location and the distributor that supplies the paper. The paper industry is structured to serve major accounts, not folks who buy a case or three every so often. If you fall into this latter category, the best thing to do is to go through your local stationery store, a printing shop, or a paper distributor.

You can also try Paper Direct, a mail-order company that specializes in selling small quantities of paper from various manufacturers. You can get a sample kit for \$14.95, which is refunded with your first order. Contact Paper Direct at 57 Romanelli Avenue, South Hackensack, NJ 07606; (800) 272-7377. Portico Press sells a complete and well-written report on laser papers, which includes about 70 samples of different papers you should try. The report and samples cost \$21.95, including shipping and handling. Contact Portico Press at P.O. Box 190, New Paltz, NY 12561; (914) 255-7165.



## RESOURCES

**Table 1: Laser Papers**

Paper name	Price (per ream)*	Weight (pounds)	Colors	Legal size	Comments	Company
Boise Cascade 25% Cotton Laser Paper	\$7	20	white	yes	Watermarked.	Boise Cascade Advanced Technology Papers 1600 S.W. 4th Ave. Portland, OR 97201 (503) 224-7250
Boise Cascade Laser Paper	\$7	20, 24	white	yes		Boise Cascade Advanced Technology Papers 1600 S.W. 4th Ave. Portland, OR 97201 (503) 224-7250
Classic Laid Laser Finish	\$12	20, 24	10 colors	no	Laser version of the popular Classic Laid.	Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000
Crane Bond White Wove	\$30	20, 24	white	no	100-percent cotton. Watermarked.	Crane and Co., Inc. 30 South St. Dalton, MA 01226 (800) 826-6634
Crane Crest	\$30	20, 24	white	no	100-percent cotton. Watermarked.	Crane and Co., Inc. 30 South St. Dalton, MA 01226 (800) 826-6634
Crane Fluorescent White Opaque	\$30	20, 24	white	no	100-percent cotton. Bright white. Watermarked.	Crane and Co., Inc. 30 South St. Dalton, MA 01226 (800) 826-6634
Environment 25 Writing	\$14	24	5 colors	no	25-percent cotton. 100-percent recycled fibers. Laid and wove finishes.	Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241 3405 (404) 587-8000
Finch Laser Opaque	\$6	20, 24	white	no		Finch, Pruyn and Co. 1 Glen St. Glens Falls, NY 12801 (518) 793-2541
Gilbert Neu-Tech	\$19	20, 24	white	yes	25-percent cotton. Watermarked.	Gilbert Paper 430 Ahnaip St. Menasha, WI 54952 (800) 992-2311
Hammermill Bond	\$4.50	20, 24	15 colors; legal size in white only	yes	Watermarked.	Hammermill Papers 6400 Poplar Ave. Memphis, TN 38197 (901) 763-7000
Hammermill Laser Plus	\$9.50	24	white	yes	Wax holdout.	Hammermill Papers 6400 Poplar Ave. Memphis, TN 38197 (901) 763-7000

\*Approximate price for 500 sheets of 8.5-x-11-inch white, 24-pound (if available) paper in single-carton lots



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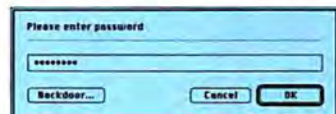
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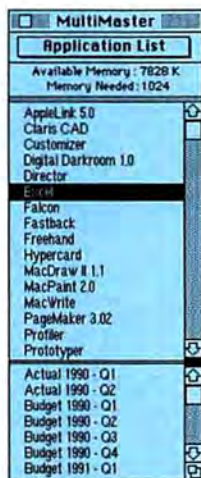
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**Now Software™**



Table 1: Laser Papers, continued

Paper name	Price (per ream)*	Weight (pounds)	Colors	Legal size	Comments	Company
Hammermill Laser Print	\$7	24, 32	white	yes		Hammermill Papers 6400 Poplar Ave. Memphis, TN 38197 (901) 763-7000
Kimberly Writing	\$13	20, 24	8 colors	no	25-percent cotton. Watermarked. Wove and laid finishes.	Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000
Lancaster Neu-Tech	\$22	20, 24	white	yes	100-percent cotton. Watermarked.	Gilbert Paper 430 Ahnaip St. Menasha, WI 54952 (800) 992-2311
Laseredge HR-10	\$37	27	white	yes	Laseredge papers are specifically made for producing camera- ready art.	CG Graphic Arts Supply 481 Washington St. New York, NY 10013 (800) 342-5858
Laseredge HR-20	\$50	32	white	yes		CG Graphic Arts Supply 481 Washington St. New York, NY 10013 (800) 342-5858
Laseredge HR-30	\$53	38	white	yes	Company recommends that HR-30 be fed manually.	CG Graphic Arts Supply 481 Washington St. New York, NY 10013 (800) 342-5858
Laseredge HR-50, HR-60RC	\$61	30	white	yes	HR-50 and HR-60RC are the same, but HR-50 is erasable. Both have wax holdout.	CG Graphic Arts Supply 481 Washington St. New York, NY 10013 (800) 342-5858
Legacy Laser 25-Percent Cotton	\$24	24	white	no	Packaged for retail sale. Same paper as Strathmore Writing.	The Legacy Co. 333 Park St. West Springfield, MA (413) 737-4770
Legacy Laser Bond	\$21	24	white	no	Packaged for retail sale in 100-sheet packs. Same paper as Hammermill Laser Print.	The Legacy Co. 333 Park St. West Springfield, MA (413) 737-4770
Mead Ultratech	\$15	20, 24	3 colors	yes	Watermarked.	Mead Paper Co. Courthouse Plaza N.E. Dayton, OH 45463 (513) 222-6323
Moistrite Lasergraphic	\$8	20, 24	9 colors	yes		Mead Paper Co. Courthouse Plaza N.E. Dayton, OH 45463 (513) 222-6323

\*Approximate price for 500 sheets of 8.5-x-11-inch, white, 24-pound (if available) paper in single-carton lots



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Table 1: Laser Papers, continued

Paper name	Price (per ream)*	Weight (pounds)	Colors	Legal size	Comments	Company
Neenah Classic Crest Writing	\$13	20, 24	2 whites	no		Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000
Neenah Laser N.P.	\$13	20, 24	6 colors	yes	25-percent cotton. Watermarked.	Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000
Nekoosa Laser 1000	\$10	24	white	yes	Designed for camera-ready art.	Georgia Pacific 100 Wisconsin River Dr. Port Edwards, WI 54469 (715) 887-5111
Old Council Tree Bond N.P.	\$22	20, 24	2 whites	yes	100-percent cotton. Watermarked.	Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000

\*Approximate price for 500 sheets of 8.5-x-11-inch, white, 24-pound (if available) paper in single-carton lots

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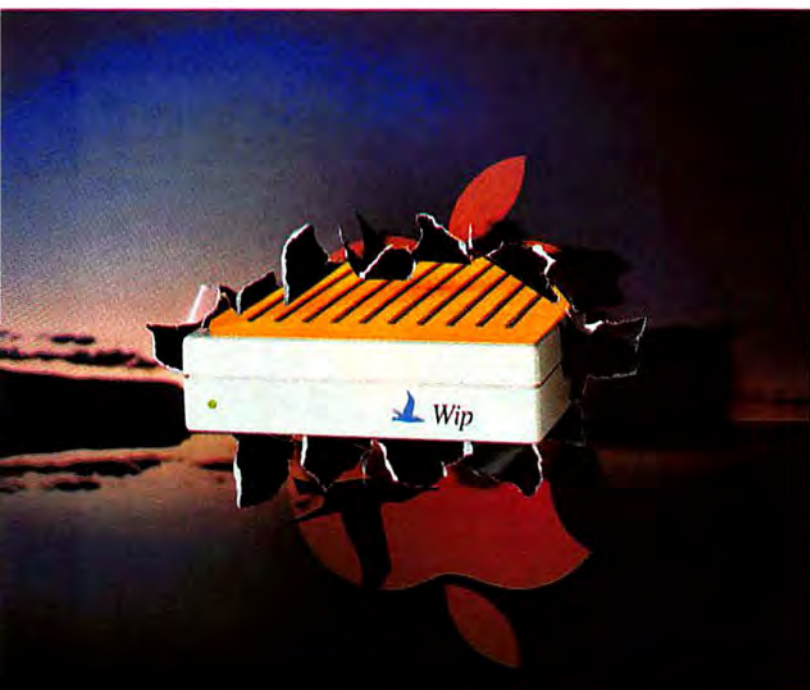
*So fast that it waits for me, I don't  
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Paper name	Price (per ream)*	Weight (pounds)	Colors	Legal size	Comments	Company
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Strathmore Renewal 25 Percent	\$21	20, 24	white	no	25-percent cotton. Recycled.	Strathmore Paper Co. S. Broad St. Westfield, MA 01085 (413) 568-9111
Strathmore Writing	\$14	20, 24, 28	11 colors	no	25-percent cotton. Watermarked. Wove and laid finishes.	Strathmore Paper Co. S. Broad St. Westfield, MA 01085 (413) 568-9111
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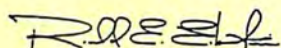
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Resolution (dpi)	80	72	72	72
Vertical refresh	75	78	75	74
Pop-up menus	Yes	Yes	Yes	Yes
Enlarged menubar	Yes	Yes	Yes	Yes
Enlarged cursor	Yes	Yes	Yes	Yes
Screen saver	Yes	Yes	Yes	Yes
Screen copy	Yes	Yes	Yes	Yes
Full year warranty	Yes	Yes	Yes	Yes
VideoPaint	No	No	Yes	Yes
DeskPaint v1.5	Yes	Yes	No	No
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Uniform Condensed Semi	
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Uniform 56 Book	
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Uniform 47 Condensed	
Uniform 49 Condensed	
Uniform 57 Condensed	
Uniform 58 Condensed	
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Uniform 69 Condensed	
ITC Usherwood	\$500
Usherwood Book	
Usherwood Bold	
Usherwood Bold	
Vivaldi (VGS)	\$25
<b>VIVALDI</b>	
Vivacorn	\$500
Weldemann Book	
Weldemann Book Italic	
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# Filtered Effects

*You can easily add special effects to simple black-and-white line art if you know how to use the filters that are built in to a painting or image-editing program.*

**By the editors of  
Verbum magazine**

**M**ost painting programs (PixelPaint, Studio/8, SuperPaint, UltraPaint) and image-editing applications (Photoshop, ColorStudio) include special filters that can enhance all or selected portions of a bit-mapped image. Filters add power to computer graphics by letting you quickly and automatically add detail, richness, or interesting distortions to otherwise simple line art or scans. Some programs come with as many as two dozen different filters that can darken, lighten, soften, sharpen, posterize, speckle, or add a mosaic pattern to an image.

Janet Ashford, a designer in Solana Beach, California, used the filters in PixelPaint 2.0 to add detail to a series of picture cards for her daughter Molly. Ashford first scanned in line art and then used the Trace Edges filter to generate a double outline of all image elements. After adding flat colors, she applied the Smooth filter, which added intermediary colors to the art, producing the rich, detailed look of a painting.

**Verbum: The Journal of Personal Computer Aesthetics** can be reached at Box 15439, San Diego, CA 92115.



## 1 Scanning Line Art

Using reference photographs, Ashford makes black-and-white sketches of Molly's favorite possessions. The line art is scanned at 75 dpi, saved in PICT format, and opened in PixelPaint 2.0 for editing.





## STEP BY STEP

**2 Tracing the Edges**

PixelPaint's Trace Edges filter is applied to the entire image. This filter draws a thin line along both sides of the lines in the original image, creating closed tubular shapes that can be filled with color. The traced image is checked for broken lines, which must be repaired before color is added.

**3 Adding Flat Color**

Ashford uses the paint-bucket tool to add solid colors to the larger areas of the image. The bright, youthful colors are chosen from the Vivid palette, one of several ready-made palettes that come with PixelPaint.

**4 Coloring the Traced Edges**

Contrasting colors are added to the tubular shapes created by the Trace Edges filter. Because the tubes are small and narrow, the image must be magnified to position the paint bucket accurately.

**5 Adding Painterly Detail**

Using the paintbrush tool, Ashford adds strokes of color in different saturations to various parts of the image (dress, cheeks, chair legs). The strokes add depth and detail to the flat color and give the image more of a "painted" look. The image is proofed on a color printer to check color accuracy; the blues are too dark on paper, so lighter shades are substituted.

**6 Using the Smooth Filter**

The entire image is selected, and the Smooth filter is applied. This filter softens the image by averaging the color of pixels in adjacent areas and producing new intermediate colors along the borders. Black lines look fuzzier, for example, because colored pixels near the lines become a little grayer. Brush-stroked details are blended into the background.

**7 Adding a Background**

A rectangle is drawn around the finished image and filled with solid color. By adjusting the width of the paintbrush, Ashford adds borders, decorative dots, and squiggles to the background. The halo effect around the doll and chair is hand-drawn; in Studio/8, however, you can achieve this look automatically, using the Trace With Brush feature. Type is hand-drawn with the mouse, filtered with Trace Edges, and filled with color.





## Application

MacWrite II

FileMaker Pro

MacDraw II

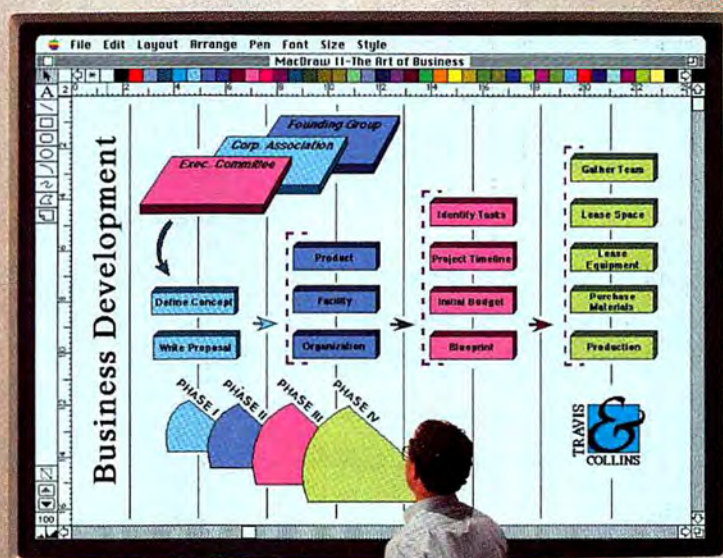
HyperCard 2.0

MacProject II 2.0

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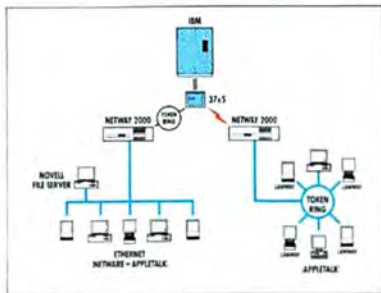
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*Keyboard, mouse, and . . . fax machine? Yup. Global Village Communication is now shipping TelePort/Fax. The original TelePort is the Eddy-winning 2,400-bps modem that connects to the ADB (Apple Desktop Bus), as your keyboard and mouse do. It's ultracompact (3 x 5 inches) and doesn't require a separate power supply (most modems do). TelePort/Fax is software that adds 4,800-bps fax-send capability to the package.*

**By Henry Bortman**



**MacX and Videotex:** For UNIX buffs, Apple is now shipping version 1.1 of MacX, which lets a Mac act as an X Window server. Major new features: 8-bit-color graphics; the ability to cut, copy, and paste from X Window windows to Mac windows; and significant speed improvement. Also now available from Apple: X Window System 2.1 for A/UX. It includes the new MacX, plus a complete Native X Window System client environment for A/UX. (Client and server are backwards with X Window: Applications run on the client, user windows display on the server.) The new package is a full implementation of X11, Release 4. ➤➤ White Pine Software, maker of MacX's major competitor, eXodus, recently introduced VTXpress for accessing VAX/VMS-based videotex information from a Mac. Videotex is a popular document-retrieval system.

**Blue Utilities:** Responding to Insignia's AccessPC challenge, Dayna has announced a new version of its DOS Mounter utility. Both products allow Mac users to mount DOS-formatted disks directly on the Mac desktop. Dayna says the new version is faster than its 1.0 predecessor and can format Mac and DOS disks, low- or high-density, directly from the Finder. ➤➤ For the True Blue among you, Traveling Software, maker of LapLink Mac, now offers WinConnect, a DOS-to-Windows utility. Say you've got your Windows machine in your office and a DOS-only portable that you take on the road. Connect the two via a serial cable and run WinConnect, and the portable's DOS volumes appear on the Windows desktop. ➤➤ Pacific Microelectronics has introduced Common-Link, a software utility that runs on a Sun SPARCstation and enables it to read from and write to DOS- and Mac-formatted 3.5-inch floppies.

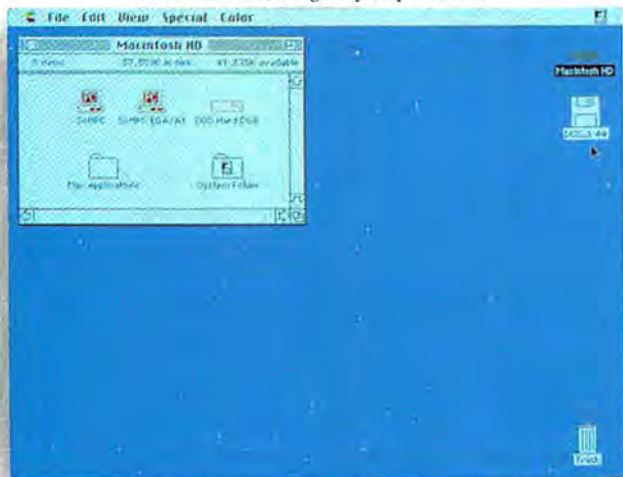
**Speaking of SPARCstations:** Sun now has a new high-end lineup. Starting at \$15,000 for the monochrome SPARCstation 2 and topping out at a whopping \$50,000 for the SPARCstation 2GT (intended for ultrafast 3-D solids-rendering), the new machines are rated at 28.5 MIPS. They all come with 16 megabytes of RAM, built-in Ethernet, a 3.5-inch floppy-disk drive, and Sun's annoying optical mouse. There's also a "low-cost" \$25,000 SPARCserver 2, for small work groups.

**Iris on Your PC:** If you can't afford one of Sun's new machines, try IRISVISION. It's a real-time 3-D-graphics coprocessor for MicroChannel and AT machines, just announced by Silicon Graphics, that comes in 8- and 24-bit versions. AutoDesk, Pixar, Virtus, Wolfram Research, and a host of other software developers are busily writing applications for the new board. ☞

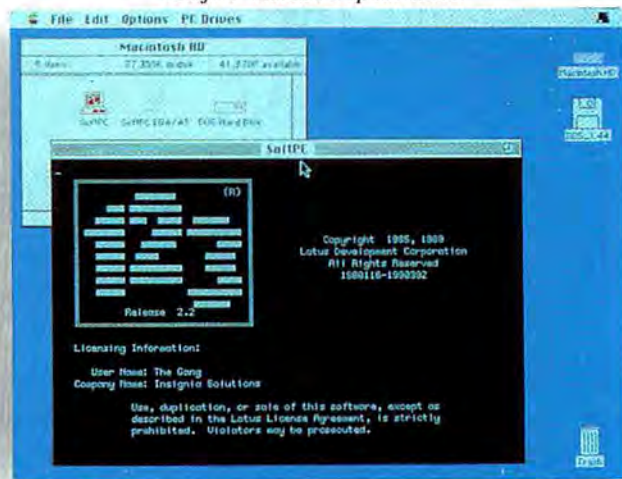




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# Apple Gives Nod to Ethernet

*Five new Ethernet products point in a clear direction toward higher-speed networking for the Mac.*

**By Henry Bortman**

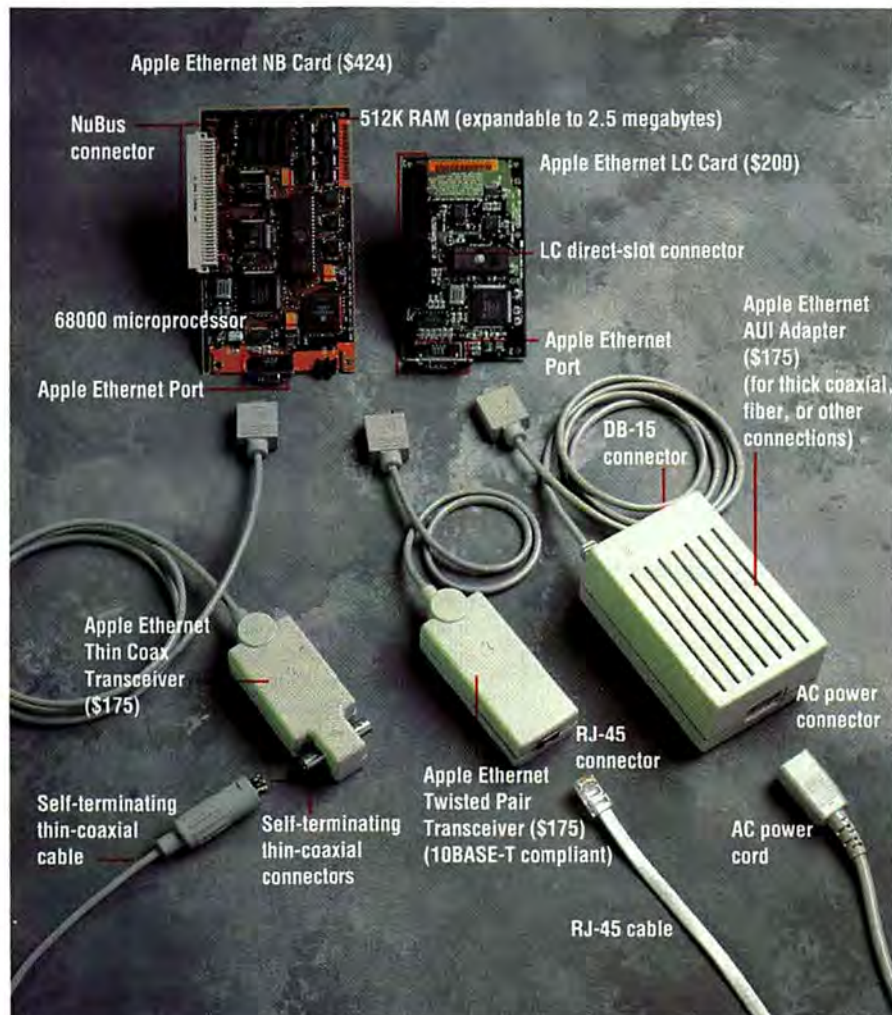
**N**etworking has been part of the Macintosh vision since its beginning. LocalTalk, a relatively low-speed implementation of Apple's AppleTalk network-protocol system, is built into every Mac. It's LocalTalk that lets you connect a group of Macs to a LaserWriter and print with the ease that Apple calls plug-and-play networking.

However, as networks — and the files that move across them — grow in size, the bandwidth (data-carrying capacity) of LocalTalk begins to feel the strain. This is why many users are beginning to migrate their networks from LocalTalk to higher-speed Ethernet.

Apple has supported Ethernet with its

EtherTalk NB Card for NuBus Macs since January 1988. And more than a dozen third-party vendors now supply competing Ethernet interfaces, not only for NuBus Macs but also for SEs, SE/30s, LCs, Pluses, and Classics (see "Are You Ready for Ethernet?," June '90, Buyer's Guide, page 20).

Apple recently announced a new group of Ethernet products that represents a giant step toward higher-speed networks. The five new products in the Ethernet line (see Figure 1) include two cards (one for NuBus machines, the other for the LC) and three media adapters (for thin-coaxial-cable, 10BASE-T-compliant twisted-pair, and AUI connections).



**Figure 1:** Apple's new Ethernet line consists of five aggressively priced products: two Ethernet cards (one for NuBus machines, one for the LC) and three media adapters (for thin-coaxial, 10BASE-T, and AUI connections). Any of the three media adapters can work with either of the two cards.



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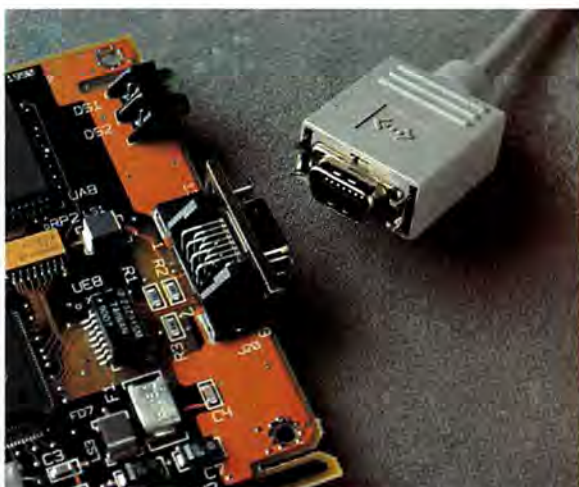


Figure 2: Apple's new Ethernet Port uses a nonstandard connector, but it gives users flexibility to choose any type of Ethernet cabling system. And its compact size will help it find a home on future Mac CPU motherboards.

One of the complications of using Ethernet is that it can run over any of a number of cabling schemes. Most Ethernet-card vendors address this problem by offering different cards for different cables or by putting multiple transceivers on the same card. Apple took the opposite approach. It opted to leave the transceivers off the cards in order to provide flexibility at a low cost. To pull off this scheme, Apple introduced Yet Another New Connector, which it calls the Apple Ethernet Port. But — trust me — this time it was a smart idea. With this new port, switching cable types only requires changing media adapters. No jumpers. No switches. It's true plug-and-play Ethernet — a very elegant piece of work.


Apple added some other nice touches. The Ethernet NB Card (for NuBus machines) contains its own 68000 microprocessor with 512K of RAM (expandable to 2.5 megabytes). This will allow Apple or third parties to download TCP/IP, DECnet, or other network protocols to be processed directly on the card, relieving the main CPU of that task. With expanded memory, this feature may someday also enable router software to run directly on the card.

My Favorite New Thing, though, is that the Apple Ethernet Thin Coax Transceiver and accompanying coax cables sport *self-terminating* connectors. Don't ask me why nobody ever did this before, but I'm glad Apple's done it now. Usually when a connection is broken anywhere on a thin-coax Ethernet network, the two resulting cable segments become unterminated and the whole network dies. With Apple's cables and connectors, both cable segments always remain terminated and both continue to function. Users can continue to work, albeit with limited connections, and

network managers can easily locate and repair the break.

Apple has priced these new products aggressively. The total cost of the Ethernet LC Card (\$200) and one of the three media adapters (\$175) is only \$375 — less than most Mac Ethernet cards on today's market. The NuBus card lists for \$424; when you add in an adapter, the total is \$599. This is a little on the steep side but is still \$100 less than Apple's current Ethernet NB Card — and the new card is far more capable. The new cards will ship with Apple's Phase 2 EtherTalk drivers only. Apple may live to regret this decision, but the Mac's maker *really* wants people to make the switch to Phase 2. Apple had not made a decision at press time about whether it would make a Phase 1 driver available on request.

Several third-party vendors simultaneously announced support for Apple's new Ethernet scheme. Asanté, Farallon, NRC, and SynOptics will all provide Ethernet-compatible transceivers of various types, with prices as low as \$149. Asanté will offer a competing LC card bundled with either a 10BASE-T transceiver (\$349) or a three-way transceiver (10BASE-T, coax, and AUI — \$399). NRC will offer NuBus and SE cards and routers that conform to Apple Ethernet. No one at press time had announced either an SE/30 card or an external SCSI-to-Ethernet interface for Pluses and Classics that would work with the new port.

One last thing. No hard facts, but Apple has dropped a significant hint that one of the reasons for adopting the new compact port is to prepare for the probably-not-too-distant day when Ethernet will be available on Mac motherboards — and maybe even on LaserWriters. 

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# This is your hard disk severely fragmented

This is how a typical fragmented hard disk looks. The abuse fragmentation can deal is a crime, and it's causing a national epidemic in offices everywhere. But the more you use your computer, the more your files are spread all over your hard disk. As a result, your disk has to work a whole lot harder than it has to. And increased head movement not only slows down your file access times, it will slow you down, too.



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Even defragmentation software can't help much. Wimpy defraggers just place pieces of individual files adjacent to each other. Defraggers just don't have the intelligence to constantly monitor your file usage. So, any increases in performance are modest and only temporary, disappearing as soon as you use your computer again.



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■ Frequently used files ■ Seldom used files ■ Free space  
Numbers & Letters are scattered pieces of single files

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Until now this age-old annual problem had two solutions.

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# Computing on the GO

*GO Corp. unveils its new PenPoint operating system and ushers in the era of mobile, pen-based computing.*

**By Henry Bortman**

**P**roblem #1: *Computers are hard to use.* Computer experts will tell you that the Mac's graphical user interface has made computing so easy that anyone can learn to do it. A lot of people who don't use computers will disagree. They're still intimidated — yes, even by Macs. The mouse might simplify things, but computers, regardless of who makes them, still act like, well, *computers*.

*Problem #2: Computers are not mobile.*

Portable, yes, but not mobile. The latest rage is "notebook" computers. Trouble is, these new welterweights aren't really like notebooks. They still have keyboards, which means they still take two hands to use. And before you can use them, you still have to set them down somewhere — even if that somewhere is your lap. Ah, but where does your lap go when you stand up? More importantly, where does your laptop go? Odds are, it goes back into the briefcase, and you revert to that old standby: pen and paper.

*Solution: PenPoint.*

After three years of development, GO Corp. has finally taken the wraps off PenPoint, its new operating system for mobile, pen-based computers. (Note: I said *operating system*.) GO has a computer too that runs PenPoint, but at press time, it was available only to developers. You've heard of point-and-click? Get ready for tap-and-flick. The pen will have as great an impact on computing as the mouse did. Maybe greater. This is Significant Technology.

With PenPoint, the mouse and keyboard are gone (although a keyboard is optional), replaced by a very simple, time-tested input device: the pen. No buttons. No Command or ALT keys. Just a pen. If you know how to write, you can learn to use PenPoint.

And you can use it anywhere: Walking around a warehouse, to enter inventory counts. Sitting in a client's office, to access notes on the last three meetings you've had with him — or the name of that seafood restaurant he likes. Visiting a construction site, to work up an estimate of the cost of modifying the electrical wiring. Just like a notepad — only smarter.

Last November GO gave the MacUser Labs NetWorkShop a sneak preview of PenPoint. Although the version we saw was pre-beta and some features may have changed by the time you read this, here are the basics of how it works.

## Of Objects and Pens

The first thing to know about PenPoint is that it is a completely new operating system — it's not DOS or Windows or the MacOS or UNIX with a few pen-handling routines bolted on. It is

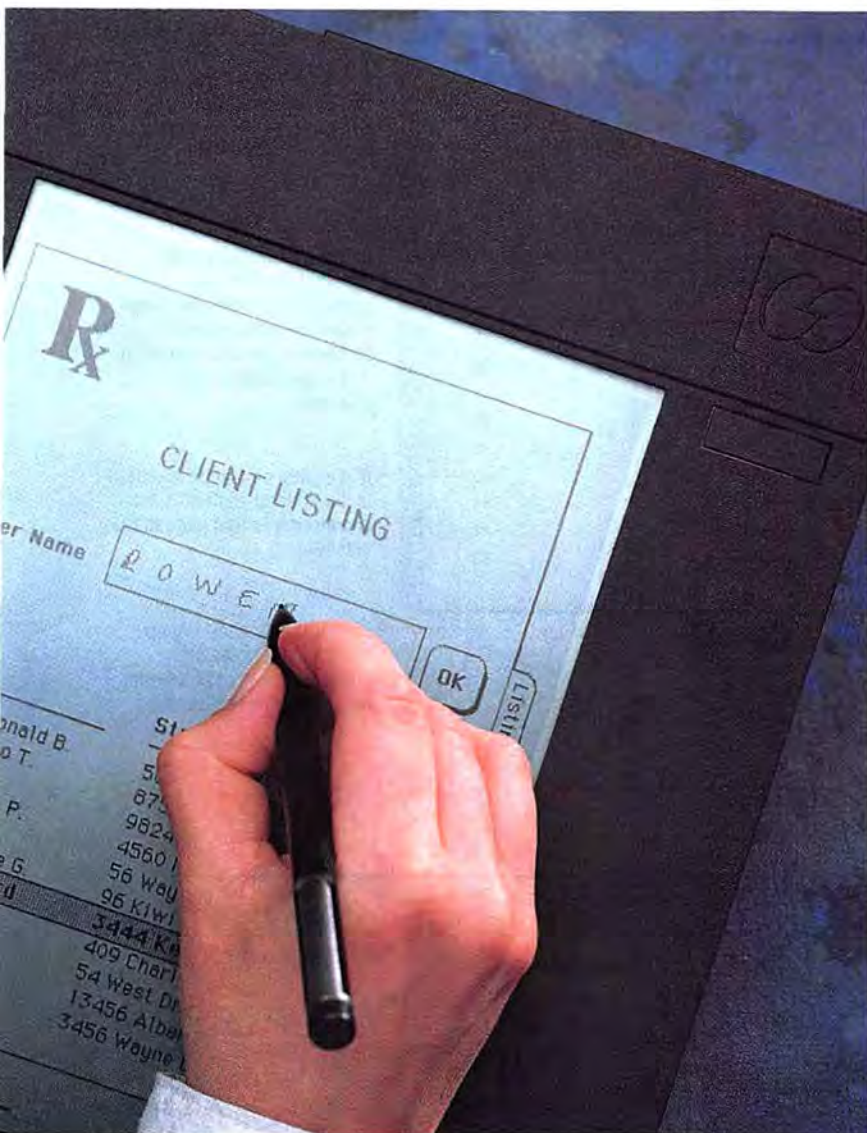


a fully object-oriented system, built from the ground up specifically to support mobile, pen-based computing.

Being object-oriented means that it allows developers to create extremely compact applications, averaging 100K to 200K. This is important when you consider that a computer running under PenPoint is likely to be running off batteries, without a disk drive. All the information it needs — system, applications, and data — has to be stored in static RAM.

Being object-oriented also means that as new features such as support for additional





network protocols, floppy-disk formats, and printers are developed, they can be installed painlessly and become instantly available throughout the system. Likewise, if GO or some third party develops a better handwriting-recognition algorithm, for example, that too can be installed with a minimum of disruption.

#### Tapping Around

The metaphor for the Mac operating system is a desktop; PenPoint's is a notebook. When you start up a computer run-

ning PenPoint, the first thing you see is a table of contents (see Figure 1). All the documents in the notebook are listed in the TOC. Documents can be grouped into sections, which are similar to folders on the Mac. On the right side of the TOC page are tabs like the tabs on notebook dividers. You can create a tab for any document or section. If you want to work with a document, you tap the pen on a page number in the TOC or on a tab. PenPoint takes you to the selected page.

What if you just want to launch an

application? Sorry, not in PenPoint. Everything's a document. The only time you see an application is when you first install it. After that, PenPoint hides it from you. If you turn to a text document, the PenPoint machine runs a word processor. If you turn to a spreadsheet, it runs a spreadsheet program.

As there are no applications in the traditional sense, you might wonder how you create a new document. Simple. Tap on the Create menu, which contains a list of document types (GO calls these template documents *stationery*). Tap on the type of document you want to create. PenPoint runs the requisite application and creates a new page in the notebook.

But you don't have to use the Create menu. It's probably easier to draw an insertion mark (a caret) over the spot in the TOC where you want the new document to be inserted. The Create menu then pops onto the screen, and after you select the type of stationery you want, the new document is inserted in the notebook at the point where you requested it. New stationery documents are added to the Create menu automatically each time you install an application. You can also create your own stationery documents by modifying existing ones and saving them.

PenPoint allows you to embed one type of document within another. When you draw a double-caret anywhere on an existing document, the Create menu again pops onto the screen. Select the stationery of your choice, and the new document appears, embedded within the old one. No imports and exports. No hot links. No publishing and subscribing (the Mac's System 7.0 approach to interapplication links). And, although each embedded document on a page may be handled by a different application, you'll never know it. It's all live, all the time.

#### Reading Your Writing

OK, you've got your notebook, you've got your pen, you've got your document. Say it's an order-entry form with a bunch of blank fields (see Figure 2) and you're ready to enter some data. How do you tell the computer where you want the data to go? Just touch the tip of the pen to the computer screen and write. Unlike with mouse-and-keyboard systems, in most cases you don't have to select something

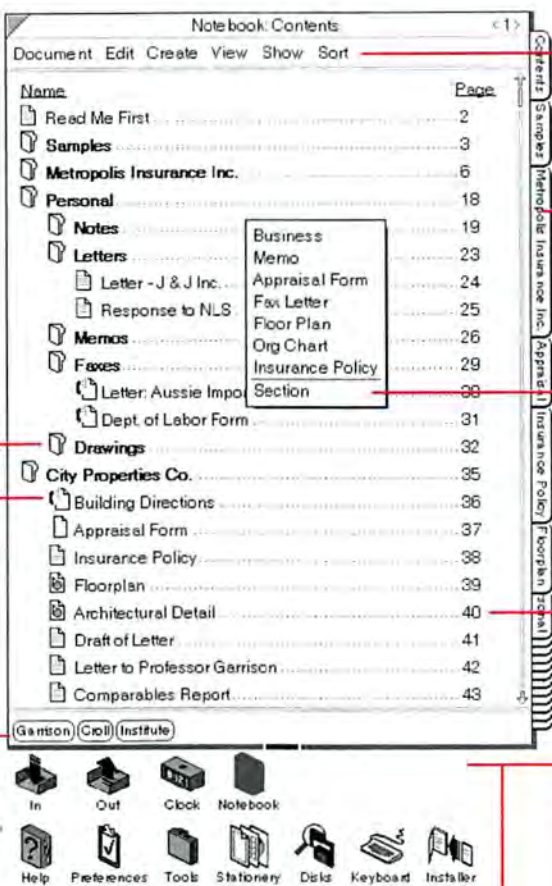


Figure 1: Instead of a desktop, PenPoint's metaphor is a notebook. When you first turn it on, it displays a table of contents — a list of all the documents available. You create a new document by choosing a document type and adding a new page to the notebook.

A. Sections are represented in the table of contents by folder icons.

B. Documents are represented by document icons. Shown here is a fax-document icon.

C. Users can custom-define hypertext buttons that link to any object in the notebook, such as a document, a phrase, a part of a drawing, or an appointment on a calendar.



D. The PenPoint operating system provides menus, but many of its functions can be performed more easily with gestures.

E. Tapping on a tab in the table of contents takes you quickly to a document or section of your notebook.

F. The Create menu lists the types of stationery documents. You create a new document by selecting a stationery type and assigning it to a new page in the notebook.

G. Tapping on a page number in the table of contents takes you directly to that page in the notebook.

H. PenPoint's shelf is your access point to system utilities, disk access, on-line help, and other features.

or position the cursor first.

When you've finished writing, PenPoint translates your handwriting into formatted text and enters it into the field where you first pressed the pen down. Don't worry if your scribbles stray outside the boundary of the entry field as you write. PenPoint is forgiving. And if it can't read what you've written, it displays an edit pad on the screen and asks you to try again. (By the way, when you write, you have to print. And keep each letter separate — PenPoint can't interpret cursive or connected letters.)

You say your handwriting's illegible, that PenPoint will never be able to decipher it. Don't worry, PenPoint can be trained. If it's having trouble interpreting your o's — it didn't like mine at first — you can use the Handwriting Customization utility to give it a lesson. It stores what you teach it in a Handwriting Profile. You can also save more than one profile in the system — handy when more than one person shares the same computer.

Sold to		Ship to	
Name	Don Lawler	Name	Don Lawler
Company	Macosor		
Address	950 Tower Lane		
City	Foster city		
State	CA Zip		

M a c U s o r  
 OK Clear Cancel

Part	Description	Qty	Price	Extension
600	28' Class "E" Scow, Fiberglass	2	5,995.00	11,990.00
620	Heavy Air Class "E" Mainsail	3	795.00	2,385.00

tax rate 7.25 %	subtotal	14,375.00
	tax	1,042.18
	<b>Total</b>	<b>15,417.18</b>

Figure 2: You enter data into a PenPoint document by writing directly on the computer screen. If PenPoint can't decipher what you've written, it displays an edit pad and asks you to try again. Shown here is a sample order-entry form created with Slate's PenApps (an application-development system).



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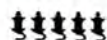
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### Gesture This

To edit text, circle it. Again an edit pad appears. To insert something, draw a caret, as you would if you were editing on paper. Up pops another edit pad. To cross out a word or a selected block of text, draw an X through it or scratch it out. PenPoint even knows, based on context, the difference between a cross-out X and the letter X. Most of the time.

GO calls such pen actions *gestures*. Gestures are an essential part of PenPoint. In fact, they're the key to its success. There are 11 core gestures in the PenPoint operating system and 20-odd less frequently used ones. You already know about the X and scratch-out for deletion, the circle for editing, and the caret for insertion. These are all core gestures. "Flick" is another biggie. To flick, you put the pen point down on the screen and give it a shove. Flick up, and you scroll the page upward. Flick down, and you go the other way. Flicking to the right or left takes you to the next or previous page in the notebook.

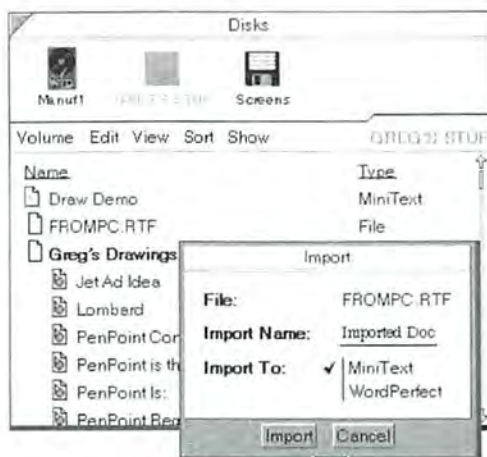


Figure 3: Documents can be moved to and from floppy- and hard-disk drives via the Disk Browser. If you import a file from a PC or Mac in a format PenPoint doesn't recognize, it will ask you if you want to translate it to a format it does support.

Multiple-flicking takes you farther in the indicated direction. PenPoint provides a traditional elevator-type scroll bar too, for those who insist on it. But flicking is easier.

Gestures can also be used to modify

type. Writing a *B* over the top of a word or a selected block of text makes it bold. An *I* makes it italic. Drawing up or down arrows increases or decreases type size. And speaking of text selection, you can say good-bye to shift-clicking or clicking

## Nice Computer. What About Software?

The success of a new computing platform often depends on the software that's developed for it. Although most vendors weren't willing to go on record at press time, the early returns seem to show that PenPoint has captured the imagination of some significant developers.

As GO's initial offering is a development system, two of the most important early packages for PenPoint — PenApps, an application-development system from Slate, and PPDS (PenPoint Data Service), from PenSoft — are aimed at developers.

Slate's PenApps is an interactive forms-design package that lets users draw forms, using MacDraw-like tools. One of PenApps' features is the SmartField. If a user repeatedly enters the same data in a SmartField, it automatically creates a pop-up menu that streamlines future entries.

PenSoft's PPDS provides both a database system, specifically designed for PenPoint, and an API (application-programming interface) for developers who want to write programs that access data stored in the database. PPDS will support dBASE's .dbf and index files, but PenSoft has no current plans to support popular relational-database programs such as Oracle and Sybase.

PenSoft will license this database "object" to other vendors that want to use it in their products, but it has its own plans for PPDS as well. The company's other offering, unnamed at press time, is a personal-information-management system (see Figure A). You know those loose-leaf notebooks that you buy at bookstores — the ones into which you can put all kinds of different pages, such as weekly planners, daily planners, notes, address books,

and to-do lists? PenSoft is porting this notebook from paper to silicon. Storing this kind of information on a computer has a distinct advantage: Computers can cross-reference. PenSoft's product enables users to store a variety of data types and to create dynamic, custom views of the stored information. For example, when scheduling a meeting, you might want to access the meeting's agenda and the phone numbers of the attendees. PenSoft's product will let you do this.

If you're wondering about meat-and-potatoes applications, Lotus and WordPerfect are both very interested in PenPoint. Lotus wasn't ready to make any announcements at press time, but don't be

surprised to see a PenPoint spreadsheet program from the company. Lotus is also investigating personal-information-management possibilities.

WordPerfect is "committed" to having a PenPoint-compatible product. In fact, the company already has WordPerfect — albeit a very early in-house version — running under PenPoint. A full-featured implementation, able to exchange WordPerfect files with the company's Mac, PC, and NeXT products without requiring translation, will ship when commercial PenPoint platforms become available in the fall.

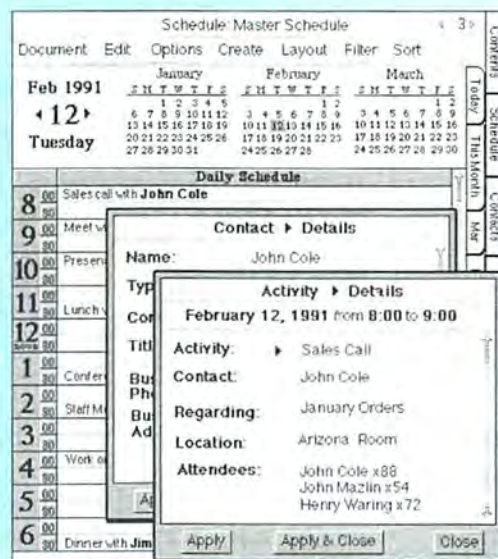


Figure A: Personal-information management is one of the ideal uses of PenPoint. PenSoft's software (unnamed at press time) combines an appointment calendar, contact directory, notepad, and other functions into a single integrated package.



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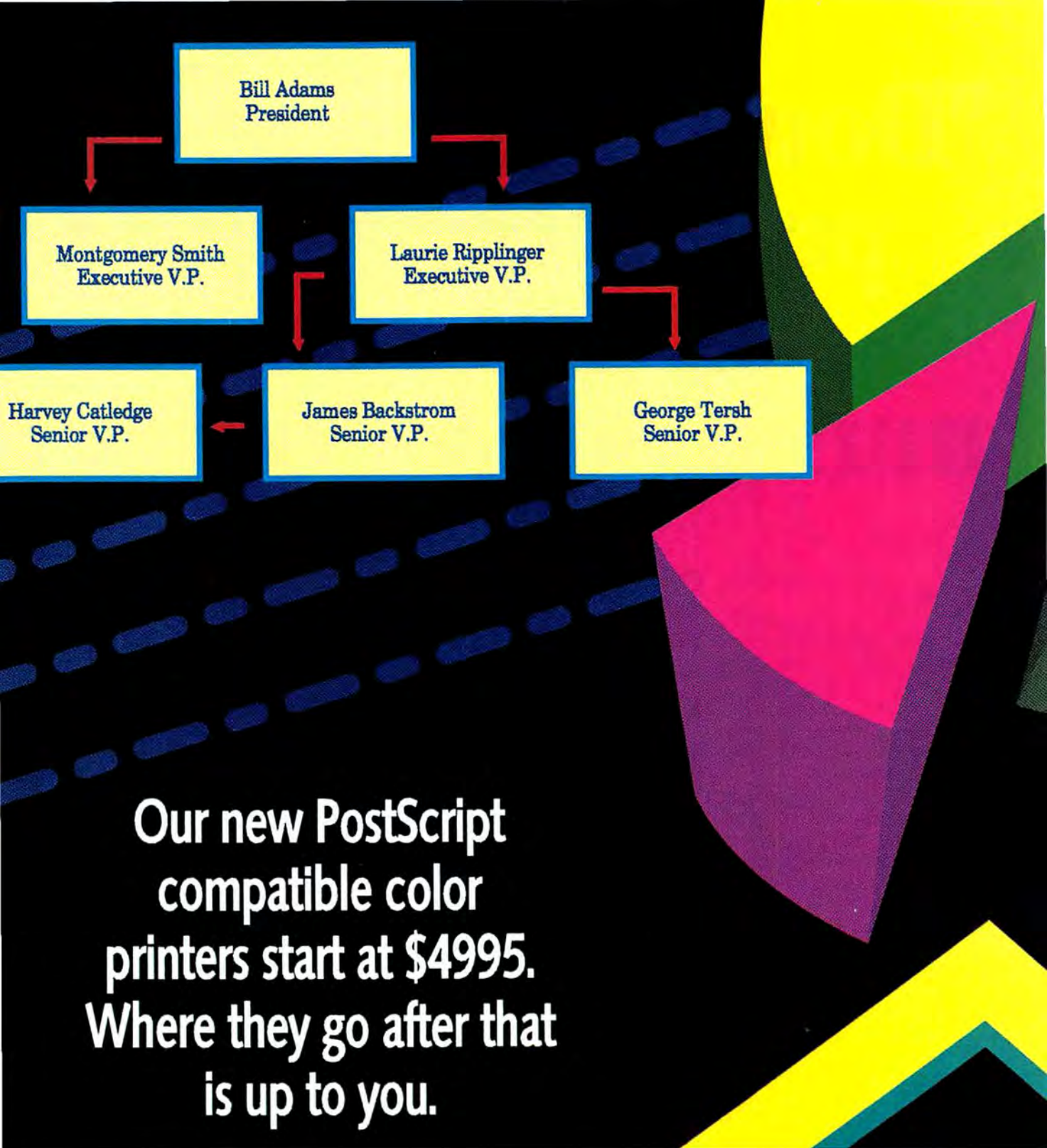
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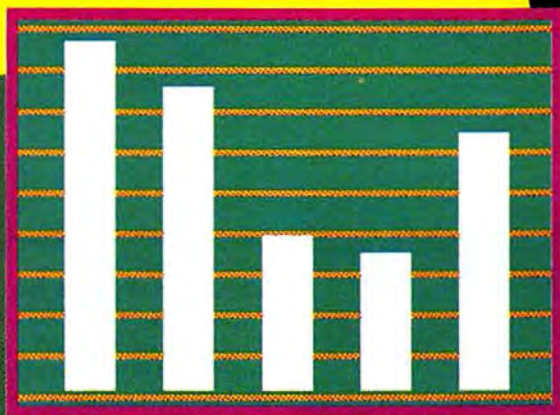
The Phaser II SX is great for individuals or small groups. It works with Windows 3.0 or Macintosh QuickDraw and is software-based PostScript-compatible. It also delivers brilliant 300 dpi ther-

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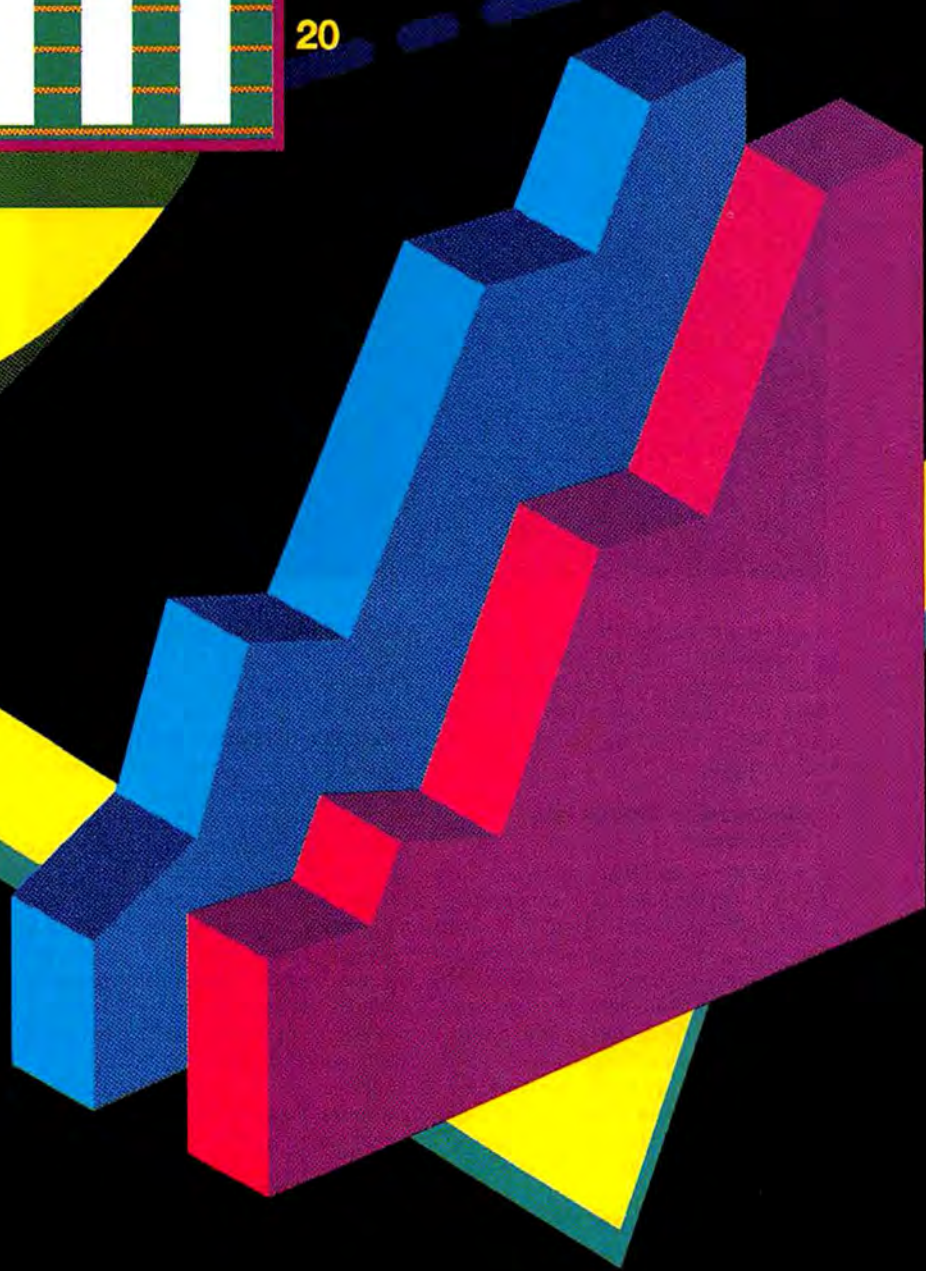
Now, say you buy an SX, your business grows, and you end up wishing you'd gotten the PX. No





80  
60  
40  
20

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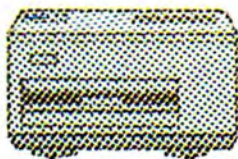


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Figure 4: PenPoint is designed for easy connection to commonly found peripherals. A 3.5-inch floppy-disk drive (D) can read and write DOS-formatted 1.44-megabyte disks and has a SCSI port for connecting to SCSI disk drives (A). A QuickCharger unit (C) provides connections to LocalTalk networks (B) and serial printers such as an HP LaserJet (E).

and dragging. An open bracket defines the start of a selection, a close bracket the end. That's all there is to it. Even if you already have text selected, you can use brackets at any time to extend the selection — in either direction.

### Software in Search of a Platform

Contrary to what you may have heard, GO is not in the business of selling computers. It does software. PenPoint was still a beta release at the January announcement. The current Go Computer is a '386-based platform that will never see the retail market, as it's for developers and evaluators only. GO is working on a '386-based platform, and when PenPoint release 1.0, which is designed for '386 platforms, ships in the fall of 1991, third-party vendors — and perhaps GO itself — will offer '386-based systems.

Even though it's now for developers only, the Go Computer points in some interesting hardware directions. As its key design criterion is mobility, the basic unit runs entirely off static RAM. No floppy- or hard-disk drive. No network. For interaction with the outside world, it has only a single connector. This can be attached to a compatible floppy-disk drive, which has a SCSI port for hard-disk drives. And the disk drive can connect to a "QuickCharger" power-supply/interface unit. The QuickCharger has a power supply, and it is from here that RS-422 connections to LocalTalk networks and serial

connections to modems, fax modems, and printers can be made. GO calls its QuickCharger, floppy-disk drive, and other similar units, which can be connected to each other, Basestation Modules. An optional PC-style keyboard can also be attached to the QuickCharger.

GO is relying on other companies to produce the hardware that most people will use to run the PenPoint operating system. IBM was the first company to announce a licensing agreement with GO, although at press time, it had not yet announced a product. PenPoint is eminently scalable, suitable for shirt-pocket-sized notepad computers to conference-table-sized models for work-group computing. Expect to see several vendors making hardware announcements in 1991, with pricing in the \$3,000-to-\$5,000 range.

### Connecting to the Real World

Now that you've heard about the wonders of this totally new and different computing system, you may be wondering how it's going to interact with the already crowded and confusing world of hardware, operating systems, page-description languages, and network protocols. Here's a quick rundown of what's planned.

**Disk Drives.** Initially, PenPoint will support only DOS-formatted disks, although GO is hoping to add support for Mac-formatted disks in the near future. GO's floppy drive can read and write 3.5-inch 1.44-megabyte floppies. For SCSI drives, GO uses a SCSI-2 (miniature 50-

pin) connector, but with an adapter cable, Mac-type-SCSI drives may work as well.

One of the shortcomings of the everything-in-RAM notebook approach is that data stored on external disks must be manually swapped into the notebook with the Disk Browser utility before the data can be used.

This is one area in which GO's attempt to shield users from the fact that they're using a computer breaks down. However, the '386 PenPoint-based computer will implement a virtual-memory scheme that will reduce the amount of manual intervention needed.

On the plus side, when PenPoint imports a file created by an application on another system, it doesn't say, "Application not available"; it asks you how you want to translate it. A list of applications for which the system has available translators pops onto the screen (see Figure 3), and the file is imported in the format you select. ASCII and RTF export are included in PenPoint, along with a MiniText word-processing application. The fax application included with PenPoint imports and exports TIFF. Third-party vendors are expected to include appropriate translators with their applications.

**Networking.** In its initial release, PenPoint will include TOPS client software. PenPoint users will be able to read files from and write files to a Mac or a PC that has "published" a TOPS server volume on an AppleTalk network, or a PC running TOPS to which a PenPoint-based



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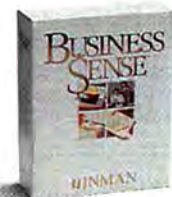
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RasterOps 8L 19" Trinitron w/8-bit card ..... \$4569  
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Farallon PhoneNET Connector (DIN-8) ..... \$29  
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computer is connected directly via a non-network serial line. But a computer running under PenPoint will not be able to act as a TOPS server.

To make networking easier for novice users, a PenPoint-based computer connecting to an AppleTalk network will automatically mount all TOPS server volumes present on the net. On large networks that have dozens of TOPS volumes available, this could get a little overwhelming. A utility that would allow users to be a bit more discriminating would be welcome.

GO is also looking into implementing AppleShare client software as part of PenPoint. At press time, however, the company had not committed to a delivery date for this. Don't be surprised to see NetWare (IPX), TCP/IP-NFS, DECnet, and other protocols, either from GO or from third parties, in the future.

Electronic mail is also on the no-comment-on-unannounced-products agenda for the future. PenPoint connections to Sitka's InBox and CE Software's QuickMail are likely candidates, but don't

expect to see Microsoft Mail work with PenPoint anytime soon. Microsoft's Bill Gates recently announced plans to add pen support to a future version of Windows, and odds are low that he'll want to give an E-mail boost just yet to the competition.

**Imaging, Printing, and Fax.** PenPoint uses GO's new imaging system, ImagePoint. It supports both bit-mapped and object-oriented graphics, as well as outline fonts. GO chose not to go the PostScript route, because of PostScript's memory and storage requirements. Four fonts will ship with PenPoint's first release, and additional fonts may be offered later on. GO hasn't addressed the question of possible future support for Type-1-PostScript or TrueType fonts.

For printing, GO's first release of PenPoint will support HP LaserJet II- and III-series printers, IBM ProPrinter IIs and 24s, the Diconix 150 Plus, and the Epson 500 — all via serial connections. Drivers for these printers will be included as part of PenPoint's first release. GO is working on providing support for PostScript printers on AppleTalk networks but hasn't


announced a delivery date yet.

PenPoint will also support fax-send and -receive capability with Group 3 compression. Unfortunately, OCR technology is not the same as handwriting-recognition technology, so PenPoint won't be able to translate incoming faxes to editable text. This looks like an obvious third-party opportunity.

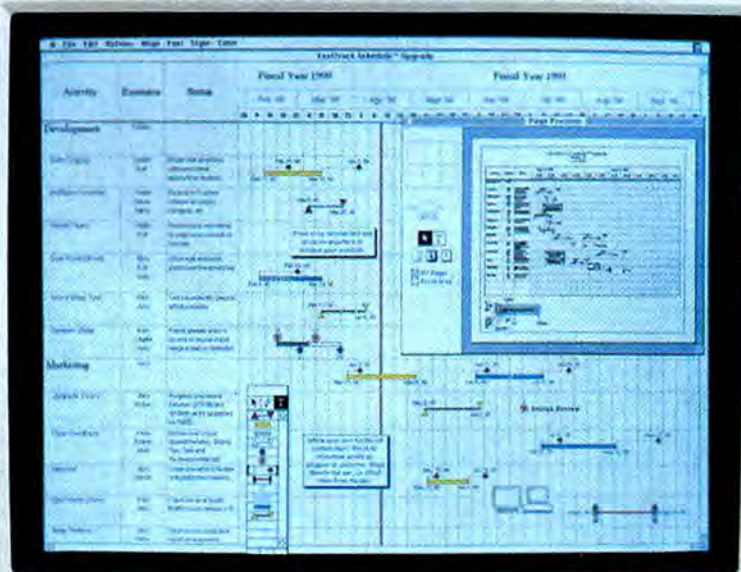
### The Droll Factor

If you've read this far, you probably already want a PenPoint computing device. Whether you will be able to afford one is another question — one that for the time being will have to go unanswered.

But pen-based computing will not long remain in the domain of technojunkies. On the contrary, one of PenPoint's big selling points is that it will lower the entry-level-computing threshold for thousands — perhaps millions — of today's noncomputer users.

When all is said and done, however, the key to PenPoint's certain success is simply this: It will help people manage information more productively. 

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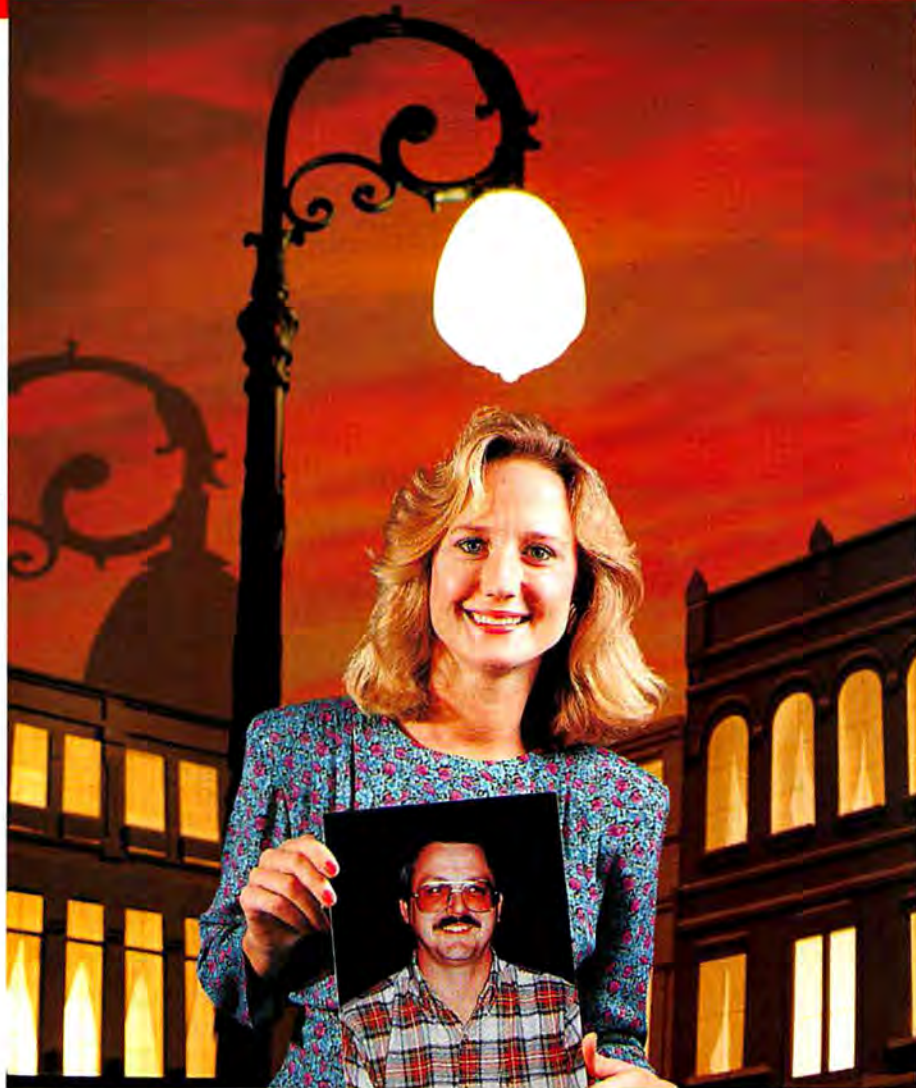
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*Kelley Muehlhausen, one of MacAvenue's top sales representatives*

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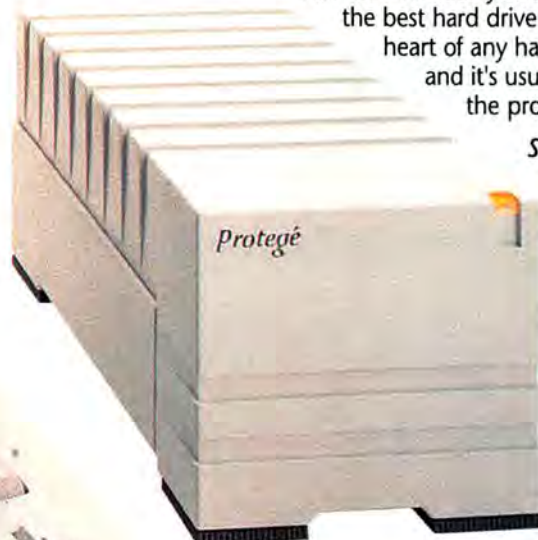
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Falcon v2.2	28614	\$30



## 3-D Graphics Made Simple

Use Paracomp's SwivelArt to create 3-D graphics for models and product proto-types. Easy to learn and includes more than 100 ready-made three-dimensional models.

Swivel Art (Paracomp). 29308 ..... \$82

### Spectrum Holobyte (continued)

Tetris	28606	\$20
Welltris	28604	\$19
Strategic Studies		
Reach for the Stars	28652	\$25
SW Toolworks		
Chessmaster 2100	28748	\$31
XOR		
MacGolf	28708	\$33
MacGolf Classic	28628	\$51
MacSki v1.0	28756	\$38
NFL Challenge v1.2	28630	\$54



## Correct Your Grammar

Eliminate grammatical errors in your important letters. Correct Grammar (given a 4 1/2 mouse rating by MacUser) not only checks and rechecks your grammar, it also rates readability, improves style, punctuation and spelling. Compatible with all major word processors.

Correct Grammar v2.0 (Lifetree). 30633 ..... \$49

## The Graphic Arts

### MOSTLY DRAWING/PAINTING

Adobe		
Illustrator v3.0	29789	\$348
Photoshop v1.0.7	29266	\$498
Aldus		
FreeHand	29784	\$326
Baseline		
Color MacCHEESE v1.05	29310	\$55
Claris		
Claris CAD 2.0	29207	\$639
Generic Software		
Generic CADD	29280	\$372
Paracomp		
Swivel 3D Professional	29294	\$427

### MOSTLY GRAPHICS EDITING

Paracomp		
FilmMaker	29900	\$437

### PRESENTATION MANAGERS

Symantec		
More v3.0	30605	\$265

### CERTIFICATE AND AWARD GENERATORS

Broderbund Software		
Print Shop	29836	\$35

### GRAPHICS UTILITIES

Frame Technology		
FrameMaker Mac	29864	\$745

### GRAPHIC ART COLLECTIONS

Multi-Ad Services		
ProArt Holidays	29876	\$95
ProArt Sports	29878	\$95
Paracomp		
Swivel Art	29308	\$82

### DO IT YOURSELF PROGRAMMING

MicroSoft		
QuickBasic	27590	\$64
Spinnaker		
PLUS v2.0	27826	\$279
Symantec		
Just Enough Pascal v1.0	27582	\$48
THINK C v4.0	27586	\$163
THINK Pascal v3.0	27584	\$160

### OPTICAL CHARACTER RECOGNITION

Dest		
Recognize!	30640	\$479



# Customer Service Is Our Most Important Product

## Create Professional Animation

FilmMaker from Paracomp gives you professional-quality animation with features such as real-time control over position, scale and rotation of animated objects, as well as full-screen anti-aliasing. And with the help of FilmMaker, your presentations also will take on new power.

FilmMaker (Paracomp). 29900 .....\$437



## Choose the Best Monochrome

The Sigma L-View will zoom out to display your work as small as 70% or zoom in to show an image as large as 200%. Use the L-View hot-key commands to choose one of six built-in resolution options. This low-emissions monitor also offers a fast 92Hz refresh rate that gives a flicker-free screen image.

L-View Multi-Mode (Sigma)  
19" monitor w/card. 22008 .....\$1495

## KEYBOARDS, MICE, ETC.

<b>Advanced Gravis</b>		
ADB Mousestick	25286	\$66
<b>Basic Needs</b>		
Cordless Mouse	25282	\$89
<b>DataDesk</b>		
Mac-101 Keyboard Platinum (Plus)	25185	\$134
Mac-101 Keyboard, ADB	25180	\$134
Mac-101 Keyboard Beige (Plus)	25181	\$134
SWITCHBALL	25183	\$98
SWITCHBOARD	25182	\$159
<b>Kensington</b>		
Turbo Mouse ADB	25281	\$107
Turbo Mouse Plus	25280	\$107
<b>MicroSpeed</b>		
MacTrac (SE, II, IIGs)	25285	\$75
<b>Microtouch</b>		
Mousestick	25287	\$158
<b>Mouse Systems</b>		
Little Mouse	25283	\$75
Trackball ADB	25284	\$69
<b>Seiko</b>		
DT3600 Digitizing Tablet	23734	\$295

## ACCESSORIES

<b>American Power</b>		
UPS 100/SE	26292	\$207
UPS 370ci	26294	\$337
<b>Applied Engineering</b>		
QuadraLink	26917	\$205
<b>Bernoulli</b>		
Bernoulli B33C 44MB	57804	\$95
<b>Calcomp</b>		
WIZ	26918	\$157
<b>Cover-Up</b>		
Mac Plus KB Skin (B1 key)	25780	\$14.95
Mac Plus KB Skin (w/ # Pad)	25781	\$14.95
Mac SE/II 101 KB Skin	25782	\$14.95
Diskette Wallet 10pk (alligator)	26909	\$7.50

<b>Cover-Up (continued)</b>		
Diskette Wallet 10pk (blue)	26910	\$7.50
Diskette Wallet 3pk (alligator)	26911	\$5.50
Diskette Wallet 3pk (blue)	26912	\$5.50
Mac Plus/SE Dust Cover	26894	\$8
<b>Fellowes</b>		
Compact Personal Shredder PS 50	52655	\$119
<b>Inland</b>		
3 Mode Surge Protector	40505	\$14.50
<b>Innovative Technology</b>		
The Library (black)	26905	\$12
The Library (grey)	26903	\$12
<b>Interex</b>		
9 Pin Male to 9 Pin Male	26298	\$7.95
Keyboard Replacement Cable, 3ft	26900	\$7
Mac 128/512 to Hayes DB9 to 25pin, 6ft	26281	\$7
Mac 128/512 to Imgwtr DB9 to 25pin	26282	\$7
Mac to SCSI 25m to 50m 2ft	26280	\$11
Mac to SCSI System cable, 6ft	26290	\$15
MacPlus Peripheral Adptr cable, 1ft	26283	\$7
MacPlus, SE, II to Apple Modem	26284	\$7
MacPlus, SE, II to Hayes Din 8 to 25pin	26285	\$7
MacPlus, SE, II to Imgwtr DIN 8 to 25	26286	\$7
MacPlus, SE, II to Imgwtr II DIN 8/DIN 8	26287	\$7
Mini DIN-8 to Mini DIN-8 Null	26297	\$7.95
SCSI Terminator, M/F Daisy-Chain	26295	\$18
SCSI Terminator, male	26296	\$18

<b>Invin Magnetics</b>		
External Tape Back-Up 5040/60	23832	\$529
External Tape Back-Up 5080/120	23833	\$719
<b>Kensington</b>		
Apple RGB Anti-Clare Filter	26891	\$62
Mac II Monitor Extended Kit	26899	\$32
Mac II Monitor Stand	25580	\$62
Mac II Stand and Cable Kit	26892	\$63
Mac II System Stand	26887	\$20
Masterpiece Mac II	26893	\$103
SE Anti-Clare Filter (beige)	26882	\$32
SE Anti-Clare Filter (platinum)	26883	\$32
Security Kit	26884	\$33



## Centron's Computerized Casino

If you can't afford a quick trip to Las Vegas, Centron's Casino Master will give you all the thrills of gambling with no risk of losing money. Roulette, Blackjack, Poker, Baccarat, Craps—all your favorite games. Complete with betting strategies, hints, odds and more.

Casino Master. 28758 .....\$38  
Casino Master Deluxe. 28760 .....\$43

<b>Kensington (continued)</b>		
System Saver Plus, (beige)	26888	\$62
System Saver Plus, (platinum)	26907	\$62
System Saver SE	26889	\$62
Tilt/Swivel	25582	\$24
Universal Printer Stand	26896	\$16.95

<b>MacAvenue</b>		
3.5" Fuji Rainbow Diskettes 1.44MB	47496	\$15.95
Keyboard drawer	41753	\$19
Teak 3.5" Double Rolltop Box (90)	41601	\$29
Teak 3.5" Single Diskette Box (45)	41600	\$17.99
Teak Keyboard Drawer	41752	\$69

<b>Pace</b>		
MacAvenue Carrying Case	26898	\$65
MacAvenue Carrying Case Ext. Kybd.	26901	\$76

<b>Sony</b>		
3.5" Diskettes 1.44MB 10PK	57440	\$24.95
Sony 3.5" Diskettes 800KB 10PK	57401	\$13.95

<b>Sophisticated Circuits</b>		
PowerKey	25030	\$64
<b>TrippLite</b>		
SpikeBar SK6-6	40510	\$22

## SOUND INTERFACES

<b>Articulate Systems</b>		
Voice Navigator II	23736	\$649
<b>Farallon Computing</b>		
Hyperdialer	26886	\$32
MacRecorder	23730	\$158
<b>Passport Designs</b>		
MIDI Interface	23732	\$76



## "Cream of the 2-D Crop" - Informal

Generic CADD from Generic Software gives you powerful computer-aided design features and sophisticated tools—all the tricks of the trade—at a price that's only a shadow of other CAD package prices.

Generic CADD. 29280 .....\$372



## Writing and Publishing

## WORD PROCESSING, WRITING

<b>Ashton-Tate</b>		
FullWrite Professional v1.5	30600	\$253
<b>Nolo Press</b>		
WillMaker v4.0	29888	\$34
<b>WordPerfect</b>		
WordPerfect Mac v2.0	30591	\$234

## PAGE LAYOUT PUBLISHING

<b>Aldus</b>		
PageMaker v4.0	29781	\$497
<b>Clarix</b>		
SmartForm Designer	29200	\$291

## UTILITIES FOR WRITERS/PUBLISHERS

<b>DeltaPoint</b>		
TASTE	30638	\$98
<b>Lexpertise</b>		
MacProof v3.2.1	30630	\$115
<b>Lifetree</b>		
Correct Grammar v2.0	30633	\$49
<b>Reference Software</b>		
Grammatik Mac v2.0	30634	\$50

## FORMATS AND FONT UTILITIES

<b>Adobe</b>		
Adobe Plus Pack v1.0	29834	\$119
Streamline v1.2	29268	\$25
TypeAlign v1.0.4	29826	\$28
TypeManager v2.0	29825	\$57
<b>Broderbund Software</b>		
Typewriter	30450	\$115



## Business Software

## INTEGRATED/BUNDLED APPLICATIONS

<b>Microsoft</b>		
Microsoft Works v2.0 w/ Quicken v1.5	30580	\$199

## ACCOUNTING/BOOKKEEPING

<b>ChipSoft</b>		
Turbo Tax	28500	\$51
<b>DAC</b>		
Easy Light Checkbook Accounting v2.0	28475	\$41
<b>Intuit</b>		
Quicken v1.5	28458	\$39
<b>Meca</b>		
Managing your Money v3.0	28463	\$139



## DayStar Gives You Top Speed

When you're ready for serious high-end performance—50 Mhz speed—you need DayStar Digital's PowerCache IIci. Plug in this turbo-charged cache card and your Ili will be the fastest Mac alive, faster than even the IliX.

PowerCache IIci (DayStar). 23649 .....\$1995

<b>Software Toolworks</b>		
Dollars & Sense v5.0	28465	\$86
<b>ProPlus</b>		
Wall Street Investor	28494	\$395
<b>Reality Software</b>		
WealthBuilder	28496	\$145
<b>Softsync</b>		
Accountant Inc. Professional	28481	\$345
<b>SoftView</b>		
# x: Personal Tax Analyst	28498	\$47
MacIntax 1040 Federal 1990	28502	\$61
<b>Timeslips</b>		
Timeslips v3.0	28504	\$196

## DATA ANALYSIS AND PRESENTATION

<b>Odesta</b>		
Data Desk v3.0	27818	\$458

## DATABASE

<b>Acxis</b>		
4th Dimension v2.1	27780	\$489
File Force	27820	\$247
<b>Clarix</b>		
FileMaker Pro	27789	\$216
<b>Fox Software</b>		
FoxBase + Mac v2.1	27791	\$292
<b>Lotus</b>		
Marketplace	29904	\$525
<b>Microsoft</b>		
Microsoft File v2.0A	27798	\$123
<b>MySoftware</b>		
MyAdvanced MailList	27816	\$27
<b>Power Up</b>		
Address Book Plus v2.0	30442	\$59
<b>Preferred Pub's</b>		
Database	27834	\$67
<b>Sensible Software</b>		
Bookends v1.2	27830	\$50
<b>Ventura</b>		
Ventura Publisher v3.0	29906	\$582

## OFFICE PRODUCTIVITY PROGRAMS

<b>Microsoft</b>		
Microsoft Mail v2.0	30496	\$85
<b>Power Up</b>		
Letter Writer Plus	30440	\$54

## SPREADSHEET PROGRAMS/TEMPLATES

<b>Informix</b>		
Wingz v1.1	30184	\$245





# Federal Express For \$2



## NEW MacAvenue Software Paks!



### More Fun, Less Money

The MacAvenue Fun Pak includes 5 programs: *Hitchhiker's Guide to the Galaxy*, *Leather Goddesses of Phobos*, *Crystal Quest*, *Solitaire Royale* and *Talking Moose*. A \$299 value!

MacAvenue Fun Pak 29400 ..... \$39.95

### Make Life Better

The MacAvenue Better Living Pak gives you *Dinner at Eight* (including The Encore Edition and The Weeknight Gourmet), *QuickLetter*, *Synchronicity* and *Protector Shark*. Six packages worth more than \$300!



MacAvenue Better Living Pak 29402 ..... \$49.95

## Hardware

### STORAGE DEVICES

antium		
10MB External Protegé	24390	\$455
10MB External Protegé	24391	\$645
10MB External Protegé	24392	\$695
10MB External Protegé	24400	\$995
10MB Internal - (llcx,ci)	24191	\$349
10MB Internal - (llcx,ci)	24192	\$549
10MB Internal - (llcx,ci)	24193	\$599
10MB Internal - (llcx,ci)	24196	\$945
10MB Internal - (SE-llx)	24188	\$349
10MB Internal - (SE-llx)	24189	\$549
10MB Internal - (SE-llx)	24190	\$599
10MB Internal - (SE-llx)	24200	\$945



### Make Third-Party Printer Connections

If you're looking for a way to connect a third-party, 24-pin printer to your Macintosh, the Orange Micro Grappler LX is the solution. Connects to Epson, Hewlett-Packard, Toshiba and other Epson 24-pin or HP LaserJet-compatible printers.

Grappler LX (Orange Micro). 22853 ..... \$129

agate		
20MB External Protegé	24380	\$345
40MB External Protegé	24381	\$395
80MB External Protegé	24382	\$525
20MB Internal - (llcx,ci)	24184	\$295
40MB Internal - (llcx,ci)	24185	\$325
80MB Internal - (llcx,ci)	24186	\$465
20MB Internal - (SE-llx)	24180	\$295
40MB Internal - (SE-llx)	24181	\$325
80MB Internal - (SE-llx)	24182	\$465

Applied Engineering		
3.5" 800K Floppy Drive	24735	\$205
High-Density 3.5" 1.44MB Floppy Drive	24736	\$239
Dayna Comm.		
DaynaFile 1.2MB DF0200	24732	\$550
DaynaFile 360K DF0100	24738	\$519
DaynaFile 360K/1.2MB DF0102	24733	\$725
DaynaFile 360K/1.44MB DF0104	24737	\$745
mega		
Bernoulli 40-40	24384	\$2195
Mac 1B Interface Kit	23834	\$48
Portable 44MB	24385	\$1429

Kennet Technology		
360K 5.25" Drive	24740	\$299
Drive 2.4 (3.5")	24730	\$325
Pace		
Protege HD Carrying Case	26908	\$24

### PRINTERS, SCANNERS AND FAXES

Adobe		
Postscript for LII	38432	\$299
Complete PC		
Complete Page Scanner	22753	\$758
Dest		
Personal Scan w/ Recognize! Software	22762	\$699
Dove		
DoveFax-External	22701	\$289
Epson		
ES-300C Color Scanner w/ I/F	22765	\$1824
Kodak		
M150 Mac Portable	22855	\$519
Logitech		
ScanMan 32	22751	\$319
MicroTek-IMS1		
Microtek 300Z Color Scanner	22755	\$1945
Orchid		
OrchidFax Modem	22702	\$449
Relisys		
Tefas RA2110	22700	\$895
Seiko		
Label Printer	22852	\$195
Labels for Seiko Label Printer	26902	\$11.99
Texas Instruments		
35 Font microLaser w/ ATalk board	22851	\$1995
17 Font microLaser w/ ATalk board	22856	\$1795
1MB memory upgrade kit	38563	\$259
2nd Drawer feeder w/ Ltr Tray	23058	\$285
Envelope Feeder	23056	\$279
Legal Paper Tray	23057	\$59
microLaser Toner Cartridge	38311	\$46

### COMMUNICATIONS-MODEM

Applied Engineering		
DataLink Express w/ MNP-5/Send Fax	22312	\$239
DataLink/Mac w/ MNP-5/Send Fax options	22313	\$275
Global Village		
Teleport Modem	22311	\$134
Hayes		
Smartmodem 9600	49578	\$899
MacAvenue		
2400 External w/o SW	49557	\$119

### COMMUNICATIONS-NETWORK

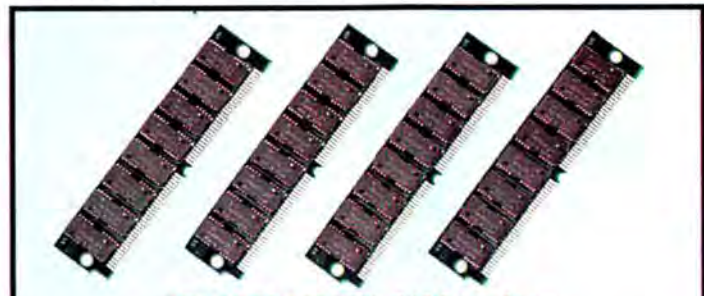
Asante		
MacCon+ IIE thk/thn	22538	\$395
MacCon+ IIET thk/UTP	22529	\$395
MacCon+ SE30E thk/thn	22526	\$395
MacCon+ SE30ET thk/UTP	22531	\$395
MacCon+ SEE thk/thn	22525	\$295
MacCon+ SEET thk/UTP	22532	\$295
Dayna Communications		
EtherPrint	22541	\$375
Farallon Computing		
Liaison v3.0	27744	\$259
PhoneNET* Connector DB-9	22511	\$31
PhoneNET* Connector Din-8	22513	\$31
PhoneNET* Repeater	22517	\$313
PhoneNET* StarController*	22516	\$888
Portable Pack	22519	\$329
Interex		
LocalTalk Connector DB-9 to Din 3	22520	\$32
LocalTalk Connector Din-8 to Din 3	22521	\$32
Phone Connector DB-9	22522	\$23
Phone Connector Din-8 w/ cable	22523	\$23
Nuvotech		
Nuvolink II	22536	\$279
Nuvolink SC	22535	\$389
Shiva		
NetModem V.32 9600 baud	22528	\$1425
NetSerial X232	22504	\$275



### More Serial Ports

Expand your system's expandability. Applied Engineering's easy-to-install QuadraLink lets you add four additional serial ports to your Macintosh. Includes a "shadow driver" so that all the new ports will be recognized by virtually all software.

QuadraLink (Applied Eng.). 26917 ..... \$205



### NEW LOW PRICE! \$49/Megabyte

Get the most processing power out of your Mac: build your four-slot SE to 4MB or your 8-slot Mac to 8MB. Only the best surface-mounted 80 nanosecond memory products. Call MacFax for pricing chart.

2 x 1MB SIMM Kit—80ns (Technology Works). 25480 ..... \$98  
4 x 1MB SIMM Kit—80ns (Technology Works). 25482 ..... \$196

Technology Works		
Mac II Ethernet Kit	22539	\$275
Mac II/10i Ethernet Kit	22540	\$275
Modem (thin)	22527	\$395

### MONITORS AND VIDEO CARDS

MacAvenue		
Full Page Monitor w/ Mac II Card	22013	\$495
Full Page Monitor w/ SE Card	22011	\$495
Full Page Monitor w/ SE/30 Card	22012	\$495
Dual Page Monitor w/ Mac II Card	22017	\$895
Dual Page Monitor w/ SE Card	22015	\$895
Dual Page Monitor w/ SE/30 Card	22016	\$895
Micron		
Mac II 8-Bit 1024X768	23544	\$585
Mac II 8-Bit 640X480	23543	\$345
SE/30 8-Bit 1024X768	23542	\$585
SE/30 8-Bit 640X480	23541	\$345



**The Easiest-to-use Modem**

The TelePort Modem from Global Village is ready to send as soon as you plug it into the ADB port on your Mac. Fits anywhere, includes MNP5 error correction and automatically matches the transmission speed of your connection.

TelePort Modem (Global Village). 22311 ..... \$134

RasterOps		
19" monitor w/ Color Board 708	22006	\$4550
Color Board 208	23538	\$375
Color Board 264	23531	\$575
Colorboard 264/SE30	23539	\$685
ColorBoard 364	23540	\$974
Grey Scale 19" monitor GS	22007	\$1614
Seiko		
14" Color RGB	22002	\$595
20" Color Monitor w/ 8 Bit Card Mac II	22018	\$2770
20" Color Monitor w/ 8 Bit Card SE/30	22019	\$2770
20" Trinitron Color Monitor	22009	\$2395
Seiko/RasterOps		
14" w/ ColorBoard 208	22005	\$909
14" w/ ColorBoard 264	22001	\$1119
Sigma Designs		
Colormax 19" monitor w/ card	22000	\$4645
L-View Multi-Mode 19" w/ card	22008	\$1495
PageView 15" w/ Mac II adapter	22100	\$1050
PageView 15" w/ SE adapter	22101	\$999
PageView 15" w/ SE/30 adapter	22106	\$1050
SilverView 21" w/ Mac II adapter	22104	\$1599
SilverView 21" w/ SE adapter	22107	\$1599
SilverView 21" w/ SE/30 adapter	22103	\$1599

### ACCELERATOR AND EXPANSION BOARDS

DayStar		
030 25MHz llcx w/ co 68882	23640	\$1499
030 33MHz llcx w/ co 68882	23641	\$1899
030 40MHz llcx w/ co 68882	23642	\$1999
030 50MHz llcx w/ co 68882	23643	\$2599
50MHz PowerCache lli	23649	\$1995
Technology Works		
lli Cache Card	23648	\$269

### MEMORY EXPANSION

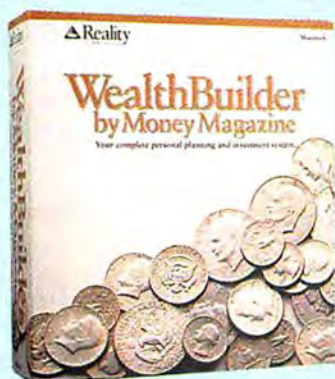
Applied Engineering		
1MB Upgrade for MacRam Portable Card	25488	\$359
MacRam Portable Card w/ 1MB	25487	\$499
Bay Electronics		
1MB TI Laser Memory Upgrade	25489	\$215
Interex		
Tool kit, 3 pieces	26881	\$13.49
Technology Works		
2 X 1MB SIMM Kit 80ns	25480	\$108
4 X 1MB SIMM Kit 80ns	25482	\$216
4 X 4MB I/llx SIMM Kit	25490	\$1195
4 X 4MB llx SIMM Kit	25491	\$1399
4 X 4MB SIMM Kit 80ns	25481	\$1120
Mac Portable 1MB Upgrade Kit	25485	\$389
Mac Portable 3MB Upgrade Kit	25486	\$1195



# Try MacsFax! 800-933-9002

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WealthBuilder by Money magazine will guide you through the stormy waters of financial planning and give you advice on investing, saving and strategic planning. You just ask questions, WealthBuilder has all the answers.



WealthBuilder by Money magazine  
(Reality Software) 28496 ..... \$145



## Accounting Made Easy

Light Checkbook Accounting from DacEasy streamlines confusing accounting chores. Simply write your checks, make deposits or record any transaction and this program takes care of the credits and debits in the background. DacEasy Light even tracks your work to prevent costly accounting errors.

Light Checkbook Accounting v2.0  
(DacEasy). 28475 ..... \$41

Symantec  
SAM v2.0 ..... 30342 \$63

## OTHER UTILITIES

Abbott Systems		
CanOpener v1.1	30348	\$63
Baseline		
Talking Moose v3.0	28762	\$23
Broderbund		
SimEarth	28764	\$45
CE Software		
QuickKeys v2.0	30357	\$94
Custom Applications		
Freedom of Press Light v3.0	30554	\$58
Freedom of Press v3.0	30444	\$255
Fifth Generation		
Suitcase II v1.2.3	30402	\$47
GDT		
ParaLink Express	30548	\$99
Insight Development		
MacPrint v1.2	30428	\$94
Now Software		
Now Utilities v2.0	30498	\$75
Power Up		
Calendar Creator	30432	\$41
Letter Writer & Address book Plus	29404	\$85



## CD-ROM Software

## ON THE LEARNING CURVE

Wayzata		
US Civics	28012	\$79
World Factbook 1989	28014	\$79

## GRAPHIC ART COLLECTIONS

NEC		
Clip Art 3D	29880	\$241
Image Folio	29882	\$244
Photo Gallery	29884	\$244
Type Gallery	29886	\$244
Wayzata		
US Seals	29304	\$55



## Perfect Word Processing

WordPerfect 2.0 does everything! Create, scale and crop graphics; add borders to your tables; master complicated macros. This new version means WordPerfect is the perfect choice for word and document processing.

WordPerfect 2.0 30591 ..... \$234

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Every hardware product and every office accessory MacAvenue sells will give complete satisfaction. If not, return it in the original packaging within 30 days of purchase for a full refund. Consumable items, opened software, videotapes and shipping costs are not refundable.
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If you experience a problem with anything you purchase from MacAvenue, call our product support staff at 1-800-766-6221 weekdays from 8:00 am to 7:00 pm, CST. We will replace the item and pay Federal Express shipping both ways.
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- Austin, Texas — Shoal Creek
- Watch for More Store Openings Soon!



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catalog!

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# MacAvenue





# What's in a Name?

*If you're not careful, the zone lists that users see in the Chooser can get scrambled and users can lose access to printers and servers.*

By Kurt VanderSluis

No matter where you are on an AppleTalk internet, the zone list you see in the Chooser is the same one. Or at least it should be. The zone that's highlighted, the "home zone," might vary, depending on where in the internet your computer is, but the contents of the list should be the same. Because of a loophole in Apple's protocols, however, a network manager can inadvertently destroy this zone-name uniformity. Let's look at how this can happen, how to avoid it, and how to cure it.

## Zone by Zone

A zone name represents a grouping of network resources, such as printers and file servers. The grouping is mostly for users' convenience, so they don't have to search through all the printers on the network to find the one they need.

Network managers assign zone names and network numbers when they configure a router. For a LocalTalk-to-Ethernet router such as a FastPath or GatorBox, you assign a zone name and network number to both the LocalTalk port and the Ethernet port. Although users never see network numbers, they are useful as a network manager's reference.

When you turn a router on, it begins exchanging information with the other routers already functioning on the internet. It soon learns the identity of all the other network numbers and zone names by building and maintaining information tables (called routing maintenance tables) in its memory that tell it

how to send packets between devices in different networks. The initial information you give a router when you configure it is the *seed* of those tables.

Figure 1 shows an Ethernet backbone connecting several LocalTalk networks — a common way to build an internet. One of the rules of AppleTalk is that all the routers on the backbone network must share their knowledge of how the internet is built every ten seconds, using RTMPs (routing-table-maintenance packets). Because of this exchange, every router knows about every other router on the backbone as well as the networks and zones they connect.

## Messing with the Internet

Let's use Figure 1 as a sample to see how changes can affect the operation of an internet. When a new router (router 4 [R4]) is added to the internet and it sends out its first RTMP, all the other routers add the number of the newly connected network, 12 in this case, to their tables.

The network number is stored in all the other routers, but its zone name is still undefined, because RTMPs don't include zone information; they include only network-number information.

In each router's ZIT (Zone Information Table), the new network number is noted, but a nil value is placed in the table for the zone name. The nil value triggers the routers to ask the new router for the missing zone-name information. The new router then informs

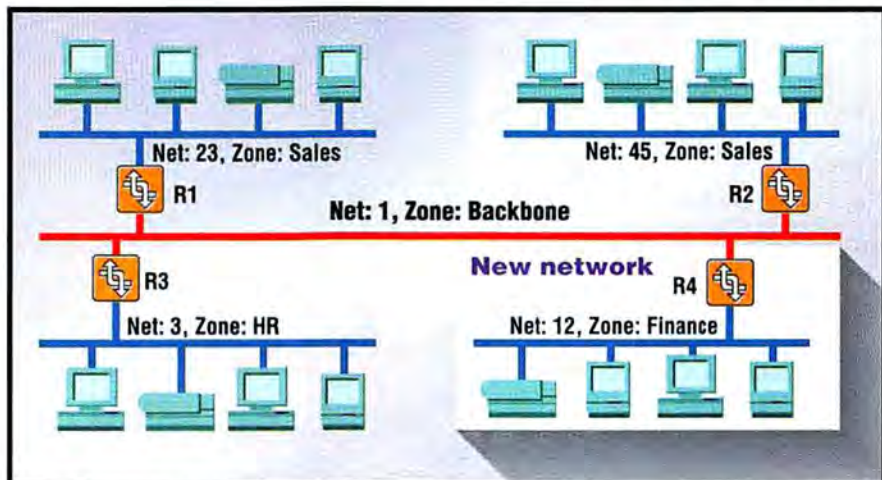


Figure 1: Zone names can get messed up when you add new routers or change the configuration of old routers, unless the network manager takes care to follow the network-protocol rules.



## BRIDGES TROUBLE SHOTS

them that network 12 corresponds to the Finance zone.

Routers that disappear from the network, because of failure or human intervention, stop sending out RTMPs. The other routers notice that these packets are no longer coming, and after some time, usually about ten minutes, they drop the corresponding network number and zone name from their tables.

At some later point, you may decide to rename one of the zones. For example, let's change the name of the zone connected to router 1 (R1) from Sales to Eastern Sales, and for the sake of the example, we'll say that the change takes only three minutes to accomplish. During this three minutes, R1 is not sending its RTMPs and the other routers are preparing to drop network 23 from their tables, because it may not be a reliable destination. When R1 is reconnected in three minutes' time and resumes sending out its RTMPs, the other routers consider it safe to send packets through R1 to network 23 again.

Because the ten-minute time limit was never reached during the change to R1,

### **When a router disappears from the internet, because of failure or human intervention, it takes other routers about ten minutes to update their tables.**


network 23 was never dropped from any of the routers' tables. The other routers don't consider it necessary to ask R1 what network 23's zone name is, because they already have a zone name for network 23 — Sales.

If you're on one of the Macs in network 23, when you open the Chooser, your Mac will ask the router for a zone list and you'll see Eastern Sales as your home zone. If you're on any of the other LocalTalk networks, Eastern Sales won't appear in your zone list because none of the other routers know of its existence — that zone is still

listed as Sales. If you're directly connected to Ethernet, your Mac will pick one of the routers to ask for a zone list — whichever router your Mac received a packet from last. Approximately a quarter of the time, this router will be R1, so Eastern Sales will appear in the list you see in the Chooser. The rest of the time Sales appears instead.

### **Preventing Conflict**

There are two ways to avoid this naming conflict or to cure it if you do have it. The first way is to make sure that R1 stays off the network for at least 20 minutes before you reconnect it, so that all the other routers will drop network 23 from their tables and ask for the zone name when R1 reappears.

The other method is to renumber network 23 at the same time that you rename it. If you were to change the number of network 23 to 24, for example, network 23 will be dropped from all the routers' tables and the new network number will trigger the zone-name request. Either way prevents you from messing up your internet when you mess with your internet. 

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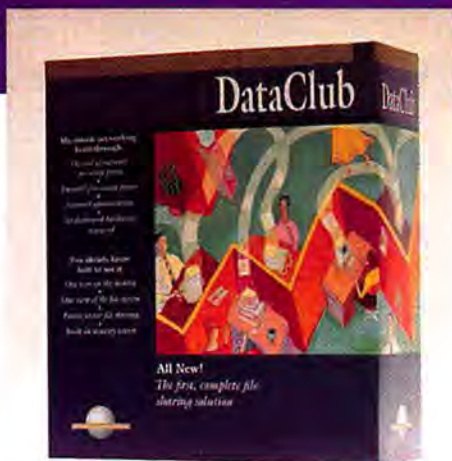
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# Extended Keyboard Secrets

*Apple's Extended Keyboard lists for \$229 and has 105 keys.*

*Because you're paying more than \$2 a key, it's worth knowing what all of them do. Here's a collection of hidden tricks, characters, and shortcuts that can make your keyboard pay for itself.*

**By Michele Stokol**

### Esc Key

This key first appeared on the ADB (Apple Desktop Bus) keyboards that debuted with the SE and Mac II. You can use it instead of Command-period to cancel an action. Apple also indicated that Esc should mean Cancel in a dialog box (although Apple itself doesn't always follow this rule); not all developers have adopted this idea (Microsoft did), but it's a good one. If you're a QuickKeys user, you can create a universal macro that clicks on a Cancel button whenever Esc is pressed.

### Tab Key

In addition to entering tabs, the Tab key usually advances a cursor sequentially through the fields of a dialog box. Don't forget that pressing Shift-Tab often moves you backward through the fields.

### Control Key

Before 1987, Mac keyboards had no Control key. The key was added so running DOS software — where Control plays the same role that Option does on the Mac — would be easier. It's also useful for sending Control characters from your Mac when you're using it as a terminal. In practice, though, the Control key's most important function is to provide a host of additional key combinations that can safely be assigned to keyboard macros. It can be used for this because most Macintosh programs don't use Control for anything.

### Option Key

This is the most underused key on most keyboards and the one with the most confusing officially sanctioned symbol in menus (⌥). Here are just a few of the most important uses for this key:

- When you hold down the Option key while dragging a file from one location to another within a single volume, the file is copied to the new location, not moved to it.
- To switch to a different Finder without restarting your Mac, hold down the Option and Command keys and double-click on the Finder file you want to launch.
- If you're in the Finder and want to switch to MultiFinder, hold down the Option and Command keys while double-clicking on the MultiFinder icon in your System Folder. Once you've switched to MultiFinder, however, you can't switch back to the Finder without restarting your Mac.
- If you're closing a window while in the Finder, holding down the Option key changes

the Close command to the Close All command. Similarly, holding down the Option key when you click on the close box of a folder window causes all other folder windows currently open to be closed too.

- Holding down the Option key when you open a folder causes the folder that contained that folder to close — a great way to keep your desktop from becoming cluttered.

- Holding down the Option and Command keys when you mount a hard disk rebuilds its Desktop file. This is a hard-disk housekeeping function that Apple recommends you perform once a year.

- With Font/DA Mover open to fonts, you can load fonts into an application or HyperCard stack if you hold down the Option key while clicking on the Open button for the second window. This lets you access and open applications and stacks in the Font/DA Mover window.

- Holding down the Option key while dragging a file into the Trash overrides any file lock or query from the System about whether you really want to throw away an application.

- If you run DOS software on your Mac, the Option key does double duty as an Alt key. Because you use Ctrl-Alt-Del with DOS to reset the computer, this might come in handy when your DOS application crashes.

### Command Key

The Command key has been with the Mac since the beginning and is probably the second-most-important modifier key (the Shift key is the first, unless you're a follower of e.e. cummings). The Command key is used for keyboard command equivalents, which are keyboard shortcuts for menu items. It also provides access to many special characters, which are detailed elsewhere in this article.

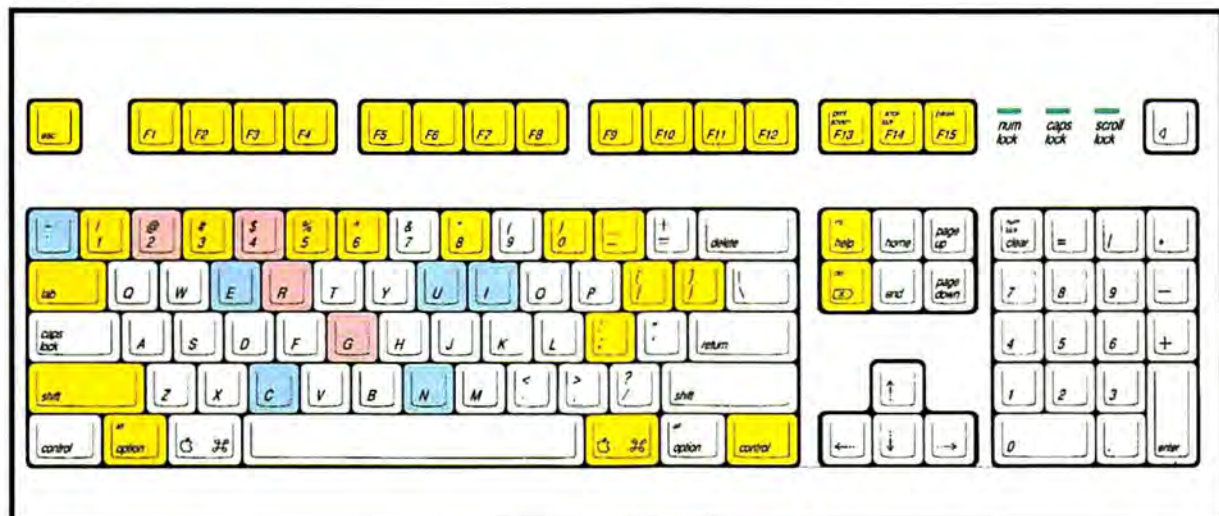
### Semicolon

Press Option and the semicolon key, and you'll discover that this is where Apple hid the ellipsis (...).

### 5 and 6

You can be forgiven if you didn't know that Shift-Option-5 produces the *fi* ligature and Shift-Option-6 produces the *fl* ligature (unless you're using Apple screen fonts such as Geneva and New York). Forgiven unless you typeset books that sell for \$100 or more, that is.





## G, 2, R, 4

Here's a cluster of frequently used symbols: Option-G produces the copyright mark (©). Option-2 produces the trademark symbol (™). Option-R produces the registered-trademark symbol (®), which at least makes some sense. And for real cents (¢), try Option-4 (look for the dollar sign and you won't forget).

## 8

Option-8 gives you a solid bullet (•) in most fonts — essential for résumés and overhead transparencies. (To get the correct accents for *résumés*, read on.) Add a Shift key to Option-8 and you get another round thing: the degree symbol (°). Need a hollow bullet? Apply outline style to a regular bullet.

## , E, C, N, U, I,

These keys all create accent marks when used with the Option key. For most, you press the desired key combination and then type the letter to which you want to add the accent. See Table 1 for a listing of all the accent marks. For example, if you press Option-E and then type an *e*, the result will be *é*. Incidentally, you can't add an accent to just any character. You won't be able to put an umlaut (Option-U) over a *v*, but you can put an umlaut over a *y*. But you *can't* put a circumflex (Option-I) over a *y*.

Confused? Here's a rule of thumb: You can put any accent (except the cedilla — ç)

over any regular vowel, and sometimes over *y*. The cedilla, however, doesn't work like other accents; it's actually a special character that you access by pressing Option-C. If you're hunting for the Option-letter combinations to create hard-to-remember accent characters (and you don't have Table 1 handy), remember that all the letters that give you accents (except the grave accent [`] and tilde [~], which have a key all their own) are in the name Eunice.

## 1

Option-Shift-1 gives you a slash (/) that's slightly different than the run-of-the-mill character under the question mark. Typography connoisseurs use it for fractions. (Not all Apple screen fonts include this character.)

## Function Keys

Function keys are an extended-keyboard exclusive. As with Esc and Control, they were borrowed from the DOS world to assist people running DOS programs on Macs. For those who run Mac software on their Macs, the function keys provide another definable-key resource for creating macros. And applications with hundreds of menu items, such as Microsoft Word, rely heavily on function keys.

The real purpose of function keys, however, is to become confused in people's minds with Fkeys. Fkeys are not the same as function keys — in fact, they're not really keys at all. Fkeys are actually small,

## Table 1: Key Accents

Option-`	grave accent (à)
Option-E	acute accent (é)
Option-U	umlaut (ü)
Option-N	tilde (ã)
Option-I	circumflex (î)
Option-C	cedilla (ç)

## Table 2: Apple's Six Fkeys

<b>Command-Shift-1</b>	Eject floppy disk from internal floppy-disk drive.
<b>Command-Shift-2</b>	Eject floppy disk from external floppy-disk drive.
<b>Command-Shift-3</b>	Save a snapshot of the screen as a MacPaint file (black-and-white only).
<b>Command-Shift-4</b>	Print the currently active window to an ImageWriter.
<b>Caps Lock-Command-Shift-4</b>	Print the entire screen to an ImageWriter.
<b>Command-Shift-0</b>	Eject disk from a third floppy-disk drive.



utilitarian programs that can be invoked with a keystroke or keystroke combination. Apple supplies several useful Fkeys with the System — see Table 2. For more about Fkeys and how they work, see “The Perils of Prediction,” by Michael Swaine (June '90, page 251).

### Dashes

Before the Mac and desktop publishing came along, only editors and typesetters worried about em and en dashes. Apple obviously didn't expect that to change, or it would have made the em dash (—) easier to type. As it is, you have to press Option-Shift-hyphen. Use the em dash whenever you would otherwise type two hyphens.

The en dash (–) is easier to type (Option-hyphen). Use it between two numbers to signify a range, as in 1960–1967 or pages 92–108. In many fonts, it makes a better-looking minus sign than the stubby little hyphen does. The em and en dash are so named because (theoretically) their lengths correspond to the width of the letters *m* and *n*.

### Quotes and Bracket Keys

Nobody notices when you use smart quotes (“ ”). But a lot of people will notice when you don't and use dumb quotes (") or dumb apostrophes (') instead. Most good word processors have an option that lets you generate smart quotes and apostrophes automatically.

Better yet, get an INIT such as Lincoln

D. Stein's freeware program Quote INIT (available from Zmac and other freeware sources). It lets you turn smart quotes on and off with whatever program you're using. (Because smart quotes and apostrophes don't always translate when you're sending a text file via an on-line service, it's useful to be able to turn this feature on and off easily.)

### Help Key

Putting a Help key on the keyboard was a good idea. Unfortunately, Apple put it too close to Delete, so lots of people hit it by mistake when they really want to delete something (and vice versa). If you find this happening to you, use a keyboard macro program to create a macro that does absolutely nothing and then assign it to the Help key. On those rare occasions when you do need help, you can access help from a menu (usually the Apple menu) or press Command-?.


### Forward Delete Key

Sometimes overlooked, this handy key deletes whatever is in front of it, as opposed to the regular Delete key's regressive aggression.

### Status Lights

These three status lights are another extended-keyboard exclusive that owe something to the DOS world. They correspond to the keyboard's three locking keys: Caps Lock, Num Lock, and Scroll Lock. Most Mac software uses only the

Caps Lock light, although Excel 2.2 can light all three.

From the stupid-Mac-tricks file: Several programmers with nothing better to do have written programs — such as Keylights by Rick Kaseguma and ADB Express by Dave Kalin — that cause a light show to play on the three status lights as you type. Look for them from Zmac and other freeware sources. 

## Care and Feeding

Although the extended keyboard needs little attention, you do need to defend it from its greatest natural enemies, dust and liquid.

If you should spill Jolt cola or any other liquid on your keyboard, turn off your Mac, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If the keyboard doesn't work afterward, take it to an Apple dealer to be repaired. Don't let the dealer pronounce your keyboard unsalvageable before doing some diagnostics. It's possible that all you did was short out an inexpensive (less than \$1) chip on the keyboard.

You can postpone dust-related problems by keeping the keyboard covered when you're not using it. If dust does become a problem, get a miniature vacuum cleaner such as the Mini Vac from Inmac (2465 Augustine Drive, P.O. Box 58031, Santa Clara, CA 95052; [800] 547-5444. \$43.95.)

## Finding Hidden Characters

### Zapf Dingbats

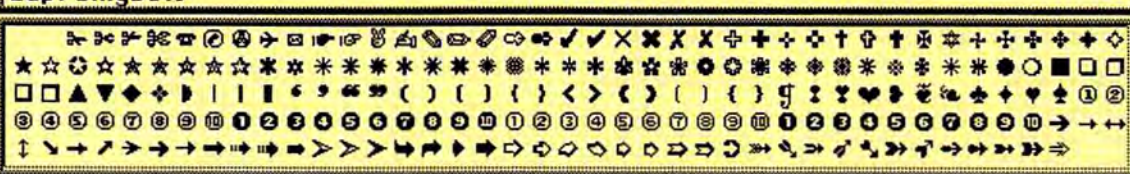


Figure A: The freeware cdev PopChar lets you pick from all the available characters in a selected font without having to leave

your application — it's faster and more convenient than using Apple's KeyCaps DA.

The Key Caps DA shows you the optional special character sets that are produced when you select an Option or Shift-Option key combination. It is especially helpful if you use special characters or fonts often. Print two copies of the Key Caps keyboard by pressing Command-Shift-3 — one with the characters you get when you select Option and one with the characters you get when you select Shift-Option — to create cheat sheets for finding the location of these unusual characters.

For a more convenient way to look up the available characters in a font, you might try PopChar, a freeware cdev written by Günther Blaschek and available from Zmac and other freeware sources. PopChar displays all the characters available in whatever font you've currently selected in your application and lets you select a character (see Figure A). The character is then automatically pasted into your document. This is, of course, particularly useful for symbolic fonts such as dingbats.



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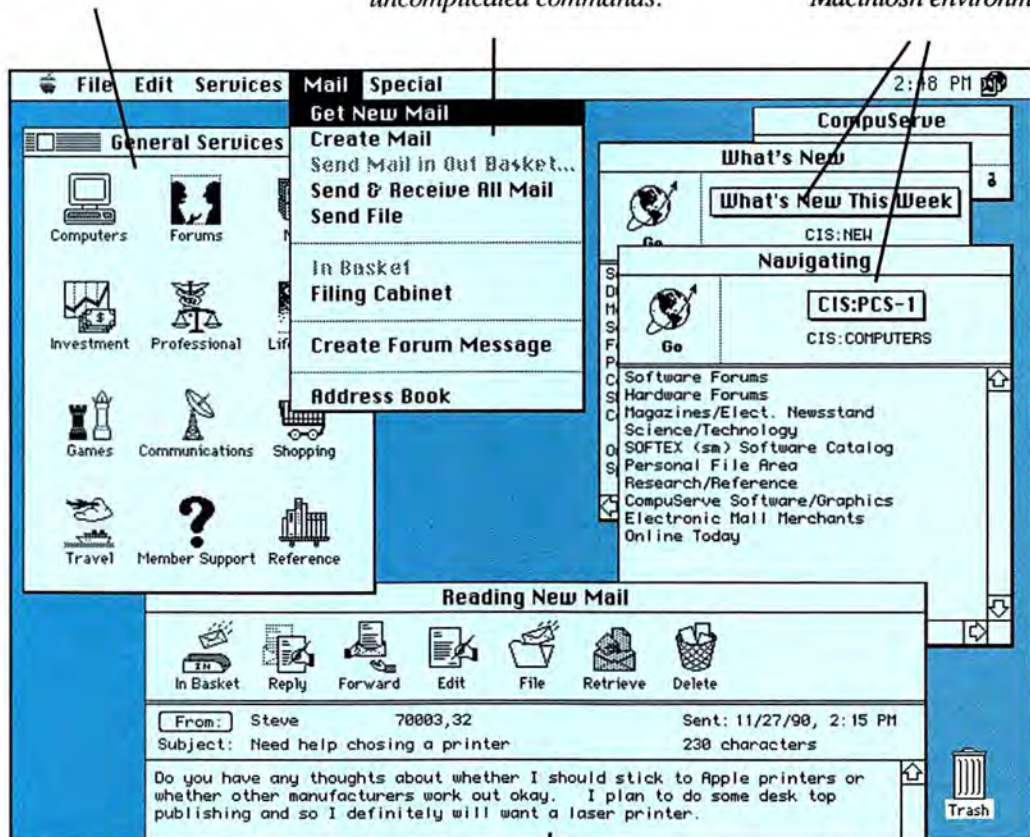


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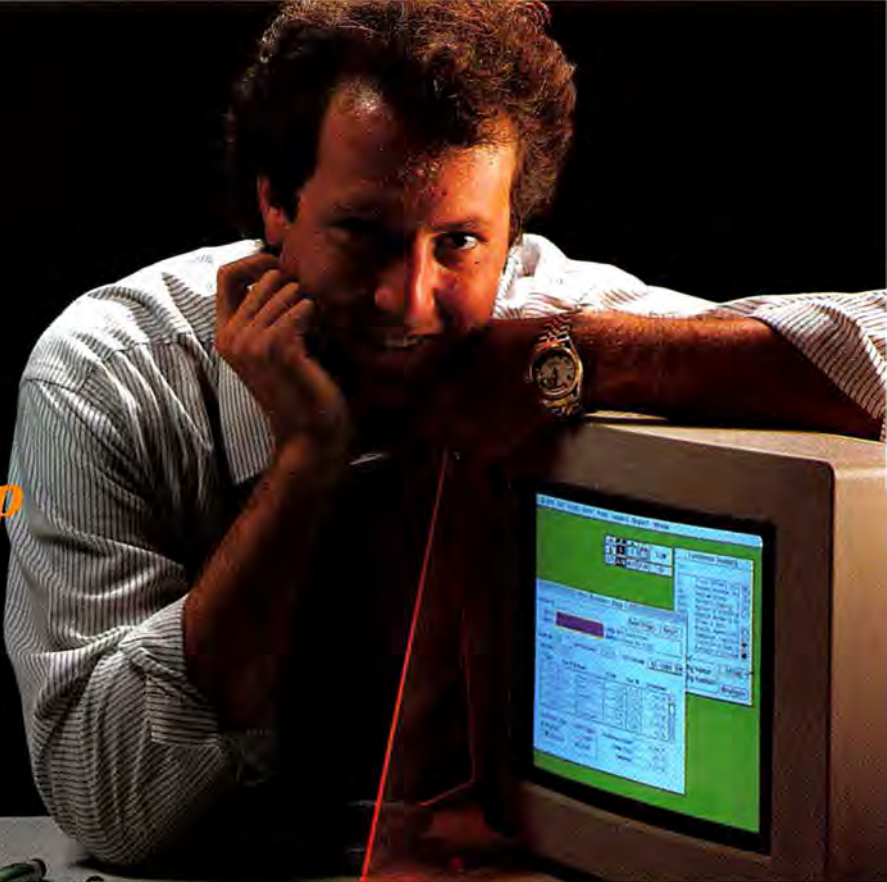
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***I'm good at desktop publishing. But desktop accounting scared me. The thought of doing bookkeeping for my design studio got me uptight.***



When I heard "balance sheet," I broke into a sweat. I know type, advertising, printing. Now I was forced to do our books.

No choice.

We were on our third part-time bookkeeper in eleven months, and she was called away suddenly. Sound familiar?

But I'm the boss and the buck stops with me. We had bills to pay, payroll checks to write, invoices to send, taxes to set aside.

And deadbeats to collect from—only I had no idea who owed us how much or for how long. Some suppliers may have even

thought of us as deadbeats. I needed to know our cash flow, and get a handle on all this. But I didn't have a lot of time.

Step one: find an accounting program that feels as familiar as our Macs, that starts out easy, but has lots of reserve firepower for later on.

I found atOnce! The manual looked orderly. I dug in...

#### **The familiar with the unfamiliar**

atOnce! starts you off with a tutorial that uses HyperCard, one of my old favorites. I was at home.

Numbers are my nemesis, but the tutorial was actually fun and got me comfortable. It takes you step by step through the program, and gives you some easy-to-swallow accounting basics so you're not reading a foreign language. There's context-sensitive help, just in case.

And while you learn, you can start to set up your books. So it doesn't come in a flash and you sweat a little. But you do it and you learn.

I started off light. Double-clicked on one of the default charts of accounts and my General Ledger was practically set up for me. Then entered a few client names in Accounts Receivable, to get an idea of what was coming in. Prepared six invoices—and atOnce! calculated sales tax. Nice. Printed the invoices which I redesigned in atOnce!—realign a field here, change a font there. The usual.

Then ran a Customer Aging Report to identify the slow-payers (I had no idea such a terrific thing was even possible).

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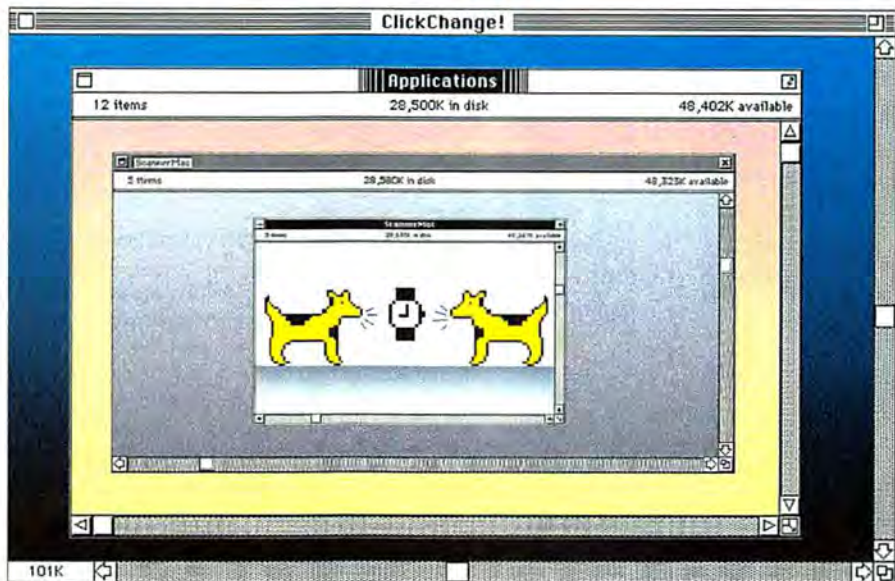
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# Radical Cosmetology

*If you've hesitated about customizing your Mac interface because experts always talk about ResEdit as though it were nitroglycerine, now there's a way you can have some of the power without all of the danger.*

By Michael Swaine



In past columns I've talked about customizing your desktop by changing the way windows are displayed, using color effectively, and altering system cursors and sounds. In the process, I mentioned several tools, sometimes falling back on Apple's resource editor ResEdit when nothing less deadly would do the job.

Now there's a utility called ClickChange that lets you manipulate all these things. ClickChange is sort of a one-stop desktop-make-over salon. Last month I talked about using ClickChange to modify system sounds. This month I'll discuss using it for everything else. I'll focus on some of its more advanced features and on how to extend it, assuming that you picked up on the details of its operation last month and that you can get an overall assessment of its quality and value from the review in this issue's Quick Clicks.

## The Cursor of the Spider Woman

ClickChange is at its most impressive — and its most frivolous — in its handling of cursors. I can't think of any compelling practical reason to change the watch cursor, which is displayed when the system or an application is engaged in some time-consuming task, into an animated image of a car with helicopter blades twirling on its roof. But if that's what you want to do, you won't find a better tool for the job than ClickChange. And the cursor-handling capabilities do show ClickChange's extensibility at its best.

The Mac's System software distinguishes

five types of cursors, normally seen as the arrow, watch, I-beam, plus, and cross system cursors. (Those who study *Inside Macintosh* know that the arrow is not a system cursor in the same sense that the other four are, but for our purposes, that's a distinction without a difference.) The system selects one of these cursors based on what's happening and where you've positioned the cursor on the screen. The watch cursor becomes active when a time-consuming action is taking place, for example, and the I-beam cursor becomes active when text input is possible at the point of the cursor. ClickChange can't create new categories of cursors, but it can let you substitute other cursors for any or all of these five.

ClickChange also provides three ways to extend this basic cursor-substitution ability: You can export cursors, import cursors, and create or edit cursors.

Exporting cursors is a handy feature. ClickChange comes with a collection of cursors among which you can choose, but if you keep all the cursors in ClickChange itself, the DA will use a lot of memory when you invoke it. The ability to export cursors means that you can keep ClickChange memory demands down and streamline your choices. It doesn't, unfortunately, mean that you can export cursors to applications such as HyperCard that display their own cursors, because ClickChange doesn't export to the right cursor format. But it does mean that you can put together your own libraries of cursors, and this becomes more useful when used in conjunction with importing.



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ClickChange lets you import cursors from files you've created with the Export option, or from other applications. It can read cursor formats that it can't write, so pretty much any cursor you find in an application can be imported into ClickChange and assigned as one of the five system cursors. You can even rearrange the assignments of the standard system cursors in this way, producing a Mac that displays a watch cursor over spreadsheet cells and a plus cursor when your system's busy.

Well, no, you probably wouldn't want to. But you could.

The cursor-editing capabilities are impressive. You can create your own cursors, archiving them to your own cursor libraries if you wish, or you can edit existing cursors or copies of them. You can name your cursors or change the names of existing ones. You can add color if your Mac supports it, as well as animation. You can control the speed and number of cells of animation, and you can turn animation on or off; you can also toggle color on or off. You can set the individual bits of the cursor with a very nice bit-map editor and set the hot spot (the active pixel) and create a custom mask (the erased space on the screen under the cursor).

The color-changing capabilities of ClickChange combine the features of the Color and Kolor cdevs. ClickChange lets you assign colors individually to elements of windows or select entire color schemes from those supplied. Or you can custom-color elements and save your colorings as a new color scheme.

The other features of ClickChange take us out to the edge of the desktop. There are some bugs to contend with and some dangers if you use the importing features incorrectly. But they let you change the appearance of your desktop in significant ways and could actually be of some practical use. Three areas are involved: windows, scroll bars, and buttons.

You can't edit any of these features as you can edit cursors, but you can turn some features on and off and select among the supplied objects or import objects from your own archive files or, maybe, from applications.

All you can do with buttons (push buttons, check boxes, and radio buttons) and with windows generally is to select among alternative versions, which differ from standard versions only in appearance. With scroll bars, however, you can select proportional elevators and/or double arrows and you can edit the scroll-bar pattern as

well as choose among various scroll-bar appearances.

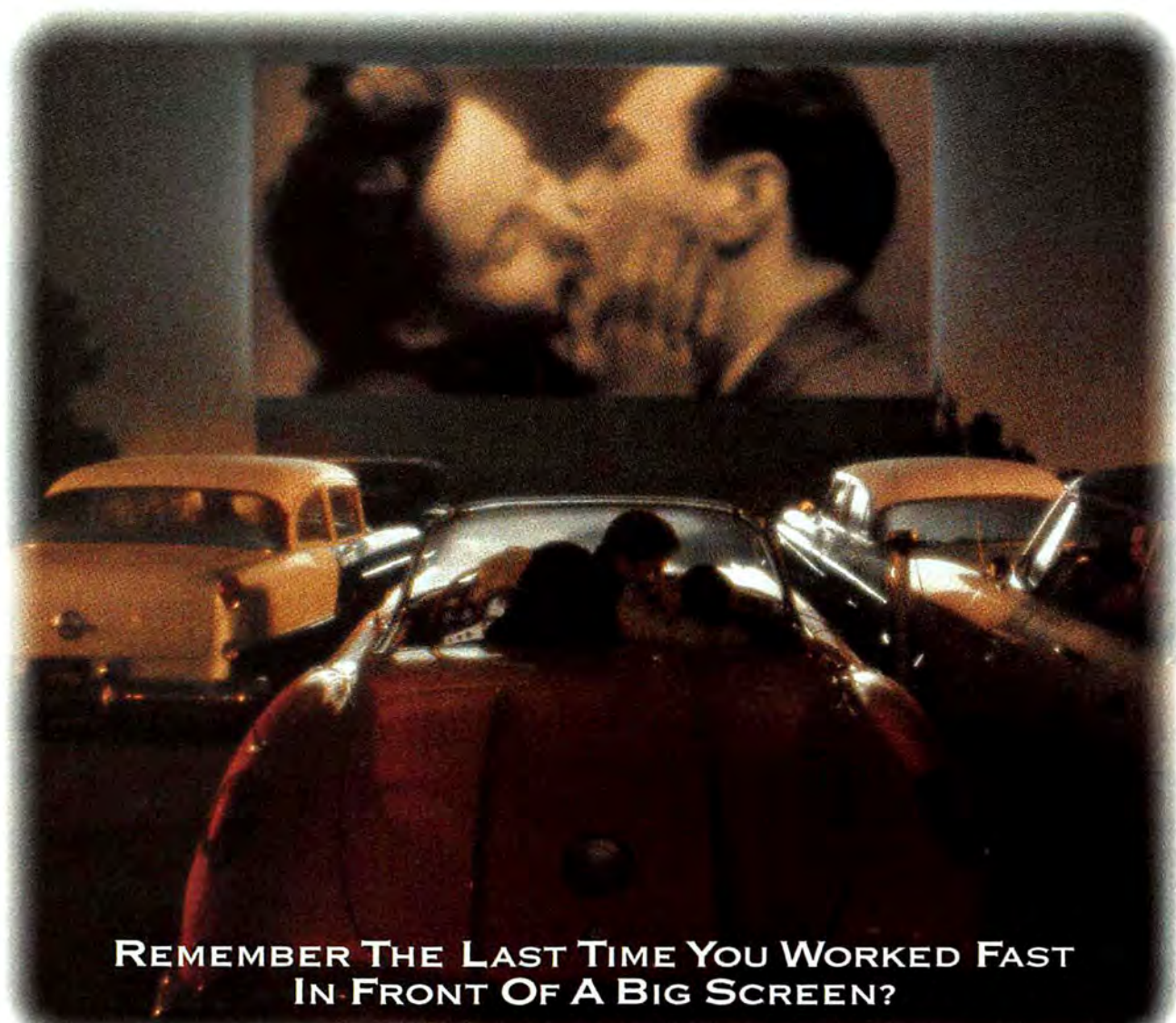
The Double Arrows option places right and left or up and down arrows at each end of each scroll bar, so that you can scroll back and forth in a document without moving the cursor much. The Proportional Elevators option causes the elevator (slider, indicator, thumb) in the scroll bar to grow or shrink to indicate the ratio of the visible portion of the document to the size of the entire document. The scroll-bar pattern is the part of the scroll bar you see where the arrows and elevator aren't. You see the pattern, that is, when the entire document doesn't show in the window — when the scroll bar is "grayed." If you edit the pattern so that it doesn't look gray anymore, this designation is only metaphorical. ClickChange's scroll-bar-pattern editor has a lot of features for such a trivial purpose. It is, we can only hope, the last word in scroll-bar-pattern editors.

It is slightly misleading to characterize the different window, scroll-bar, and button types as differing merely in appearance. By placing some window elements in different locations or making them different sizes, these alternative versions create a different feel as well as appearance. The Smalltalk-like title bar that doesn't extend all the way across the top of the window but sticks up like a file-folder tab has a different feel from the usual title bar, for example.

If it's danger you seek, it can be found. In the mandatory mousketeer category (don't try this without Annette) is the importing capability for scroll bars, buttons, and windows. Because ClickChange stores window resources in a common resource format, you can import window types from other applications. I've turned all my windows into Microsoft Mail flying-envelope windows and then into HyperCard 2.0 windoids but found neither change to be an improvement on the boring old windows that Apple provides. Importing scroll bars and buttons from applications is also possible, but you're much less likely to find scroll bars and buttons that ClickChange can use. And you stand a good chance of trashing your System file in trying, because when it comes to importing, ClickChange can be as deadly as ResEdit.

If you're a programmer, you can easily create or modify your own button and scroll-bar resources to make them usable by ClickChange. If you aren't, you'll be safer if you limit your importing to cursors, sounds, and windows.





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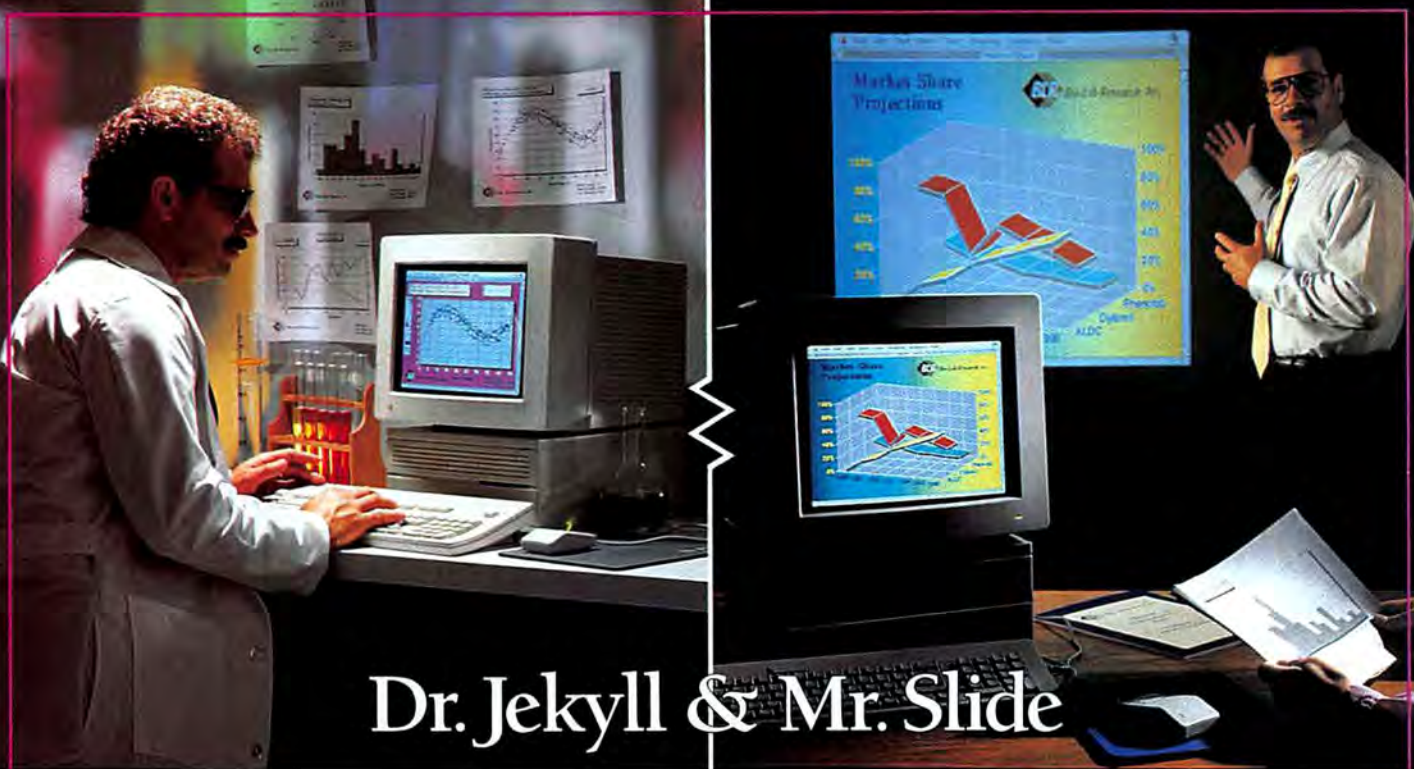
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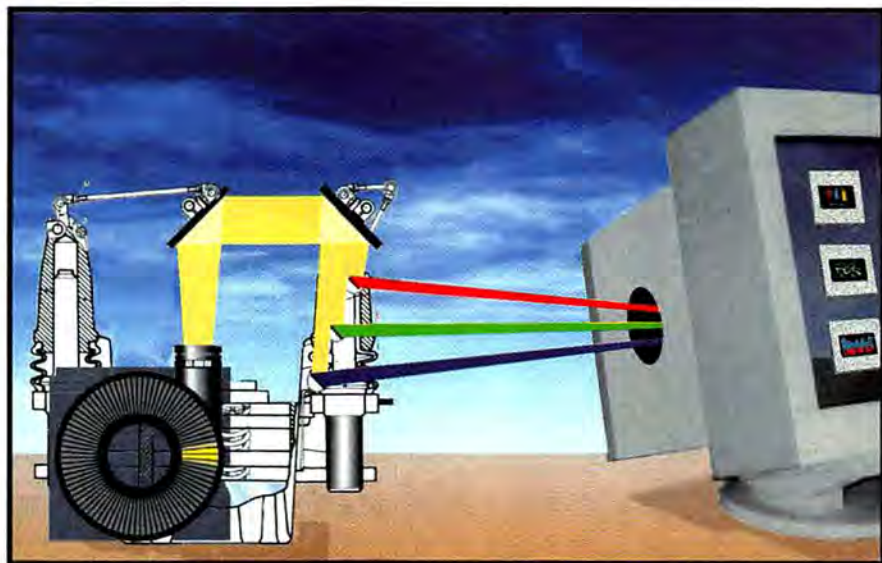
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# 35mm Dreams

*If you've dreamed about transferring your traditionally produced photographs to the digital realm of the Mac, your bubble was probably popped in a hurry once you started pricing your options. But what if there were a relatively inexpensive way to do the same thing, using a device that no one in the Mac community even knew about? Get ready to start dragging your slides out of the closet.*

**By Thom Hogan**



I've lusted after a Barneyscan ever since I saw a prototype a couple of years back (I own four camera bodies and take thousands of pictures each year—some of them are even good.) And the Barneyscan does an excellent job of converting 35mm slides into 24-bit-color graphic images.

Then last year I saw a Nikon scanner in action. If anything, it did an even better job of translating film into computer-manipulable bits. Wouldn't it be great if I could combine my semiprofessional photography habit with my day-to-day Mac use? Wouldn't it be great if I could put together a CD-ROM disc full of stock photos that Mac users could use without fee or special license? Wouldn't it be great if I didn't keep having these dreams that seem to involve \$10,000 or more worth of equipment?

My dream was going to have to stay unfulfilled, or so my bank said. I couldn't afford a Barneyscan or a Nikon 35mm scanner (priced in the same league as a compact car, and my credit line wasn't exactly unencumbered—there were those four camera bodies to pay off, for example). And the option of taking my photos down to a service bureau wasn't exactly viable, either, because it would take time I didn't have, and the price per scan is usually quite stiff (after all, the bureau has to pay off the many thousands of dollars it's invested in equipment, doesn't it?). The money I would pay the local service bureau to scan enough slides to fill a CD-ROM disc would be enough to pay for the scanner itself.

So I resigned myself to having pleasant,

albeit expensive, dreams—until I found the Tamron Fotovix, that is.

I came across the Fotovix quite by accident. Tamron (P. O. Box 388, 99 Seaview Blvd., Port Washington, NY 11050; [800] 827-8880 or [516] 484-8880) is one of the better-known Japanese photographic-equipment companies. Someone there apparently decided that photography aficionados desperately needed a way to convert their slides and negatives into video images that they could play on their TV (and, I suppose, record on their VCR). Just why Tamron's engineers thought this was a big unfulfilled fantasy, I don't know. Slide shows on videotape are not exactly the goal of any photographer I know.

What Tamron came up with was a small video camera mounted in what looks like a miniature copy stand or slide copier. The unit occupies about 4 x 6 inches and stands about 12 inches tall. Toward the top is a zoom lens with adjustments; at the bottom center is a backlit stage and holder for 35mm slides. Plug the thing in to a TV, turn it on, and insert a slide, and there it is on the TV. Not exactly something you've been waiting for, is it?

Nevertheless, the Fotovix is a cute gadget, and Tamron seems to be marketing it as just that: a cute gadget. A few professional photo shops sell it, and you can occasionally find it advertised in photography magazines, but has anyone heard of it in the Mac marketplace? No way, José. Besides, for the casual users that Tamron seems to be pushing the Fotovix to, the price is a little on the high side (\$899). As



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a result, the unit attracts little or no attention in the mass market.

But when I first saw a list of the specifications for the Fotovix, something clicked. Perhaps it was because I'd just finished playing with the Canon XapShot (see my January column) when I saw the Fotovix ad. Perhaps it was because I'd been lusting after a Barneyscan so much. Maybe the planets were auspiciously aligned. Whatever the reason, "Gee," I thought, "if this thing outputs NTSC video, why not plug it into my video digitizer and see what it does?"

So I ordered one (a review unit — I wasn't about to spend my own money on this thing until I saw if it worked, and I've already told you what my bank said about spending more money). The day it arrived, I plugged it in, stuck in a random slide, and grabbed the image with the Mac.

Five hours later, I had almost filled a Bernoulli cartridge (44 megabytes) with images. The next day, all I did was play with the Fotovix. The day after that, I got out all the photographs I've ever taken and started converting them into Macintosh images. I was hooked. Although the Fotovix certainly doesn't have the quality of the Barneyscan or Nikon scanners, it does a very respectable job and is so easy to use that it tempts you to convert just one more image.

### A Closer Look

On the Fotovix III, the amateur model that I used, you get a 3x zoom lens with focus and aperture adjustments. The zoom lets you crop images. The aperture adjustment is more of a video-level adjustment than anything else. You need the focus knob because various types of film emulsions have slightly different heights and slide mounts come in different thicknesses. All three controls are right in front where you can get to them, and the zoom and aperture are controlled by smooth-operating levers. The lens is optimized for the close-up (macro) work it does.

Tamron also sells a professional model for \$1,899. For some strange reason, it is named the Fotovix IIx (will the next model be called the IIci?). The IIx comes with a 6x zoom for accommodating different-sized film formats and for better cropping control and supposedly has a higher-caliber lens to boot. I can't verify this, because I used the amateur model only. The pro model also sports a powered zoom (which doesn't seem to be of much value, although it does add to the price).

On the right side of the Fotovix are the

power switch and two additional controls. A switch lets you scan negatives or slides (negatives become positive images with a flick of the switch!). A small joystick — and I mean small — lets you control the color balance (see Figure 1). This joystick, unfortunately, is the only weak point of the Fotovix design. First, there's no center indent to let you return to the no-color adjustment position. Second, because the joystick is so small, it's almost impossible to make subtle color adjustments with any precision.

From a cost standpoint, I can understand Tamron's decision to use the joystick to control color. Frankly, however, I would implore the company to junk that approach and use three sliding color controls (red, green, and blue), each with a center indent for neutral color. Tamron will probably argue that the joystick makes sense because you can see the effect as you move it, but I would counter with the assertion that it's impossible to repeat or even characterize the adjustments you make with the current Fotovix controls.

The backlit imaging platform, on the other hand, is the cleverest part of the Fotovix. You get separate slide and negative carriers, each of which holds five images. These carriers slide into the platform itself, and you move from image to image by sliding the carrier back and forth. The platform has adjustments for moving forward and backward and rotating. Thus, with only three motions — each of which is distinct from the other, by the way — you can position any slide or portion thereof under the lens. Both vertical and horizontal images are easily accommodated. If you have a lot of slides to convert, an auto-slide-feeder accessory is available.

OK, enough of the physical description. You want to know whether this thing works or not and, if so, how well. The short answers are yes and *quite* well, thank you.

Fotovix's final image quality is determined in part by your digitizer. I've used the modest-resolution digitizer built into the RasterOps 364 video board, so the images I've captured aren't as good as those I could create with a state-of-the-art digitizer. Nevertheless, I'm reasonably pleased. The biggest complaint I have with the setup I'm currently using is that the final image size I can capture is somewhat limited (the RasterOps 364 Framegrabber utility allows only two sizes of image capture, although you can crop either to create smaller images, if necessary). With a high-resolution digitizer, the



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Figure 1: The figure on the left shows a slide captured by Fotovix with all the controls set to normal. With a flick of the color-control joystick, however, the same slide becomes the sunset scene on the right.



Figure 2: The ultimate Australian tourist attraction: a koala. The original slide features much sharper detail in the hair, and the koala's back isn't as washed out as it appears in the Fotovix-captured version. This picture is probably right at the limits of contrast that the Fotovix can handle respectably. Likewise, the fine detail is lost in the translation to video.

Fotovix would produce images of much higher quality than those you see accompanying this column.

Nevertheless, the image quality is reasonable. The unit uses a half-inch charge-coupled device to capture about 324,000 pixels of resolution. And if you were using the ComputerEyes monochrome digitizer, image quality would certainly be good enough to add black-and-white photography to your newsletter or report. One caveat: Focusing is critical. Make sure you really do focus every image you scan by zooming in, adjusting the focus, and then zooming back out. If you don't do this, the small depth of field of this unit will turn your nicely focused image into a slightly blurry mush. The translation from

film to video sacrifices a bit of sharpness as it is, so proper focus is essential to usable results.

For critical color work, the Fotovix may or may not satisfy you. High-contrast images don't look as good as well-exposed, lower-contrast ones. The higher the contrast in your original — and Kodachrome slides tend to be very high contrast — the more you'll probably find yourself monkeying with the various controls of your digitizer software. I found myself automatically pulling down the contrast setting when imaging my slides, and I usually had to fiddle with the brightness, white-level, and black-level settings as well. Fortunately, the color rendition, although certainly not as close to perfection as what the



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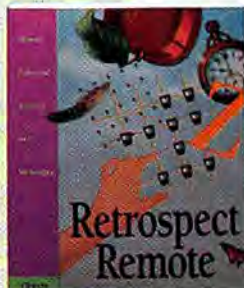
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Barneyscan might provide, is usually adequate. Thus, I found myself leaving the color controls alone for most of my images.

Don't get me wrong, however. *Time* magazine isn't going to use the Fotovix to digitize its next cover. The Barneyscan and Nikon scanners have the high-end professional marketplace to themselves, as well they should. (And I still dream of owning one.) But if you have a modest need for color photographs from time to time, and in less than full-page size, the Fotovix will probably suit you just fine.

Anyway, you can judge the quality for yourself. While on a recent trip to the Great Barrier Reef, I shot a thousand or so slides. The pictures that accompany this article come from that batch and haven't been touched up or doctored in any way; I simply grabbed them at 640 x 480 resolution and had the *MacUser* art department place them onto the page as is. I've tried to pick images that illustrate both the good and the bad in the Fotovix's imaging capabilities. Minor problems can often be corrected with programs such as Adobe's Photoshop or Letraset's ImageStudio. And remember, a better digitizer would give you better results.

Tamron's documentation leaves a lot to be desired. One thing that should have been noted, which I discovered only by trial and error, is that high ambient light levels wash out the colors in images. The backlit screen on the Fotovix lights at a very modest level, and sunlight or other light falling on the platform has a tendency to overwhelm the backlight. Because the backlight is balanced for the video pickup, the ambient light not only lowers the contrast of the photo being imaged but often changes color renditions as well. Tamron could have added a little black curtain around the platform to help keep out extraneous light. As soon as I return the evaluation unit and purchase my own Fotovix, I intend to add Velcro fasteners at the top of the unit and make my own black curtain to hang from them. The Velcro will make it easy to remove the curtain while adjusting the image position and to put it back on while I'm digitizing the image.

As you can probably tell, my complaints are pretty picky. Indeed, the things I'd change on the Fotovix would make it less of a consumer-oriented product and more of a professional-user-type product. The image quality you can judge for yourself, but I'm satisfied with the results so far and hope to add a higher-resolution digitizer in the near future.



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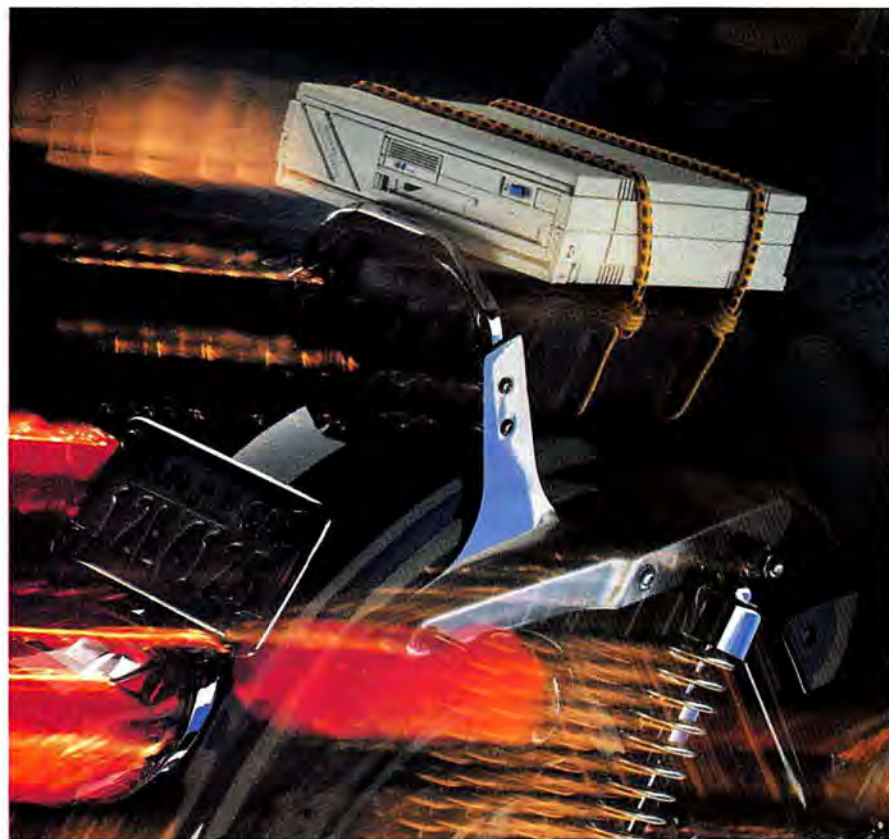
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# The Magnificent 7.0

*When System 7.0 ships, will your application bomb? Not if you follow these simple steps right now. Here's how to make sure you're System 7.0-friendly.*

By Kurt W. G. Matthies  
and Thom Hogan



There's a lot of excitement in anticipation of the release of Apple's System 7.0. This new version, touted as a giant leap for Macintosh, promises to revolutionize how we compute. We can't say when you'll finally see the magnificent 7.0, although the official line is "sometime in 1991," but when you do, wouldn't it be nice if your application ran under it?

If you've read some of the information about System 7.0 that has been published in *MacUser* during the past several months, you're probably aware of some of the nifty new features in this release: interapplication communication, virtual memory, outline fonts, and an improved Finder interface. As a reader with a technical bent, you probably also know about the more esoteric details of this release, such as built-in database support and 1-gigabyte addressing.

This is all great stuff, and we wish Apple the best of luck in getting this beast out soon, but at the same time, we're apprehensive about the effects of such a major change in System software. The precedent that's been set by the PC world fuels our insecurity.

If you're a developer of PC applications, you must first target your host environment — whether you're writing for DOS, Windows, or OS/2 — and then adjust your program to accommodate the special features of your selection. Only a handful of high-end developers can afford the overhead of maintaining three separate versions of a program that will run under all systems. As a result, PC users find

themselves forced to choose their software based on what operating system it runs under.

We'd hate to see Mac applications go the way of PC ones. But for the next few years, until System 7.0 gains widespread acceptance among the majority of Mac users, we foresee a user population that consists of version 6.0 as well as version 7.0 users. If you want your application to be available to all Mac users and therefore capable of running in both environments, you'll have to ensure that your code is System 7.0-compatible.

In your zeal to make your application System 7.0-compatible, however, don't make the mistake of making it System 7.0-dependent. The dependent program *requires* System 7.0, which is a bad idea because it assumes too much about the environment in which your application will be running. Compatible programs, on the other hand, reflect the best of both worlds; although they support the features of the new System, they don't necessarily rely on those features' being there.

## Sounding for 7.0

The first step toward making your application compatible is to make sure it can determine which System version it is running under. Apple used to tell us to call **SysEnviron** to determine this. **SysEnviron** also returns other assorted information about the machine, such as whether it supports color or has a floating-point coprocessor. The code shown in Example 1 demonstrates how to use **SysEnviron** to get the System's version



### Example 1: Testing for System Version

```
short
getSystemVersion ()
{
    SysEnvRec    sysEnv;
    short        version;

    version = 0;
    if (!SysEnvirons (1, &sysEnv))
        version = sysEnv.systemVersion >> 8;

    return (version);
}
```

### Example 2: Using System 7.0's Gestalt Manager

```
Boolean    gestaltAvail,
            has32bitVideo, hasStereo;
OSErr      err;
long       result;

gestaltAvail = TrapAvailable ($A1AD); // Check for Gestalt
has32bitVideo = hasStereo = false;
if (gestaltAvail)
{
    if (!(err = Gestalt (gestaltQuickdrawVersion, &result)))
        has32bitVideo = result & gestalt32BitQD;
    else
        ; // Do error stuff

    hasStereo = false;
    if (!(err = Gestalt (gestaltSoundAttr, &result)))
        hasStereo = result & gestaltStereoMixing;
    else
        ; // Do error stuff
}
```

number. **SysEnvirons** will still be supported in System 7.0, so you can use this method to determine whether or not your application is running under System 7.0. However, Apple is already recommending that programmers abandon **SysEnvirons** and use its successor, **Gestalt**, instead.

#### It's a Gestalt

The Gestalt Manager, a more powerful utility that has the ability to test for specific environmental features, is shipping in later releases of System 6.x (6.0.4 and later) and will be available in System 7.0. **Gestalt** gives you more information about your current operating environment, and it will eventually supplant **SysEnvirons**. But if you want to be compatible with machines running under System software prior to version 6.0.4,

you'll have to continue using **SysEnvirons** to find the System type.

Apple-certified developers have been receiving documentation on new features such as the Gestalt Manager for some time now. If you're not certified, you'll have to wait for Addison-Wesley to publish *Inside Macintosh: Volume VI*, which will be published at about the same time as System 7.0 finally ships. Here you'll find the Gestalt Manager's documentation, selectors, and result codes. In the meantime, here's a brief preview of how the Gestalt Manager works.

When you use the **Gestalt** routine to query the System about environment attributes, you pass it two things: a selector token, which tells the routine what information you're interested in, and the address of a long result, which **Gestalt** fills before it returns. For example, say you've

got a multimedia application and you're interested in the sound and video capabilities supported in hardware. The calls to **Gestalt** would be as shown in Example 2.

#### Paradigm Lost

The watchword of System 7.0 compatibility is *32-bit clean*. (What we say here also applies to getting your applications to run with A/UX, Apple's implementation of UNIX.) This "cleanliness" refers to the way that an application treats all 32 bits of an address. In previous versions of the System, only the lower 24 bits of a 32-bit address were significant. In System 7.0, a new 32-bit Memory Manager is in place that can take advantage of a full 32-bit address.

Why did Apple originally write System software that used only 75 percent of the available address bits? To understand why, we need to look to the paradigm of computer engineering in the '80s, when a 24-bit addressable range was more than enough memory for any microcomputer.

At the core of all the early Macs is the Motorola 68000. This processor, although in possession of a 32-bit program-counter register, is limited to a 24-bit address space. It ignores the upper 8 bits of an address. Starting to sound familiar?

You should realize that in 1980, a 24-bit address space, which corresponds to a 16-megabyte addressable range of memory, seemed unlimited to system designers. After all, this addressable range matched that of an IBM 370 mainframe. As technology advanced, the limitations soon became apparent and the ceiling was raised—the 68020 and 68030 both have true 32-bit addressing. Unfortunately, the damage had already been done: The Mac team had designed the 68000 addressing limitation smack-dab into the Memory Manager.

Restricting an address to 24 bits would have little effect on our applications today if it were not for another decision that was made long ago. Someone in the original Mac group had a bright idea about reusing the high bytes of each address.

You have to understand the plight of systems programmers, the engineers who make their living writing operating-system software. They are forever space-constrained. Their code must fit in some small area of ROM, with little or no room for overrun. No wonder they tend to be bit-stingy.

As part of their never-ending efforts to write "tight" code, systems programmers tend to take clever advantage of free bits



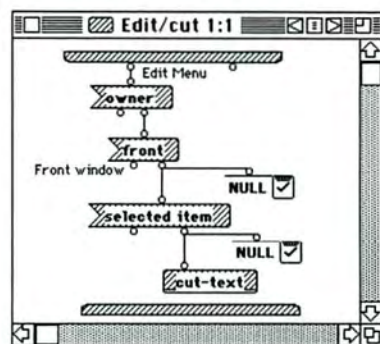
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here and there as flags, placeholders, or temporary data storage. That's what happened in the Macintosh's Memory Manager: Someone chose to take advantage of the unused high byte in a handle. In the Macintosh's 24-bit Memory Manager, the high byte in every handle contains the

corresponding relocatable block's status information.

You might call this a gutsy decision in light of the fact that Apple knew that one day it would have to support full 32-bit addressing. But remember, in a 128K Mac, every byte counted. The saving grace is

that as a hedge toward future enhancement, Apple supplied a set of Memory Manager routines — **HLock**, **HUnlock**, **HPurge**, and **HNoPurge** — for setting and clearing the status bits.

Now, Apple's been telling us for years not to change an element of a data structure directly if there's a System call that will do so for us. This is a fundamental principle that you should follow to maintain compatibility with future System versions. Most developers "got the message" and had the good sense to use **HLock** to lock a handle, but a few opportunistic developers saw a chance to save some processor cycles by eliminating the overhead of a System call — they set or cleared these bits in the handle directly. As a result, their applications are not 32-bit clean.

Here's the bottom line on 32-bit cleanliness: If you already use these Memory Manager routines, you're home free. On the other hand, if you've saved a few machine cycles by setting or clearing these bits directly, then you've got some work to do.

#### **CDEF and WDEF**

Using **HLock** and its related routines is not the last word in 32-bit Memory Manager compatibility, though. A similar problem exists in the interface to custom definition procedures. If your application contains either a control-definition function (a code resource of type CDEF) or a window-definition function (a code resource of type WDEF), then there are still a few more minor modifications that you'll need to make.

Prior to System 7.0, there was really no way for a CDEF to be 32-bit clean. The Control Manager expects your CDEF to clear the high byte of a region handle when the CDEF receives the **calcCRgns** message. Under 32-bit Memory Manager rules, you can't clear the upper byte of an address without corrupting the address.

The problem with WDEF arises because in earlier System software, the Window Manager uses the high byte of the WDEF handle to store the window-variant code. This situation is also remedied in System 7.0.

Making the WDEF compatible with System 7.0 is easy. First, you have a problem only if your WDEF supports variations. If it does so, remember that the variant's not stored in the handle anymore. Don't worry where it's stored: The system routine **GetWVariant** can return the value, and **GetWVariant** has

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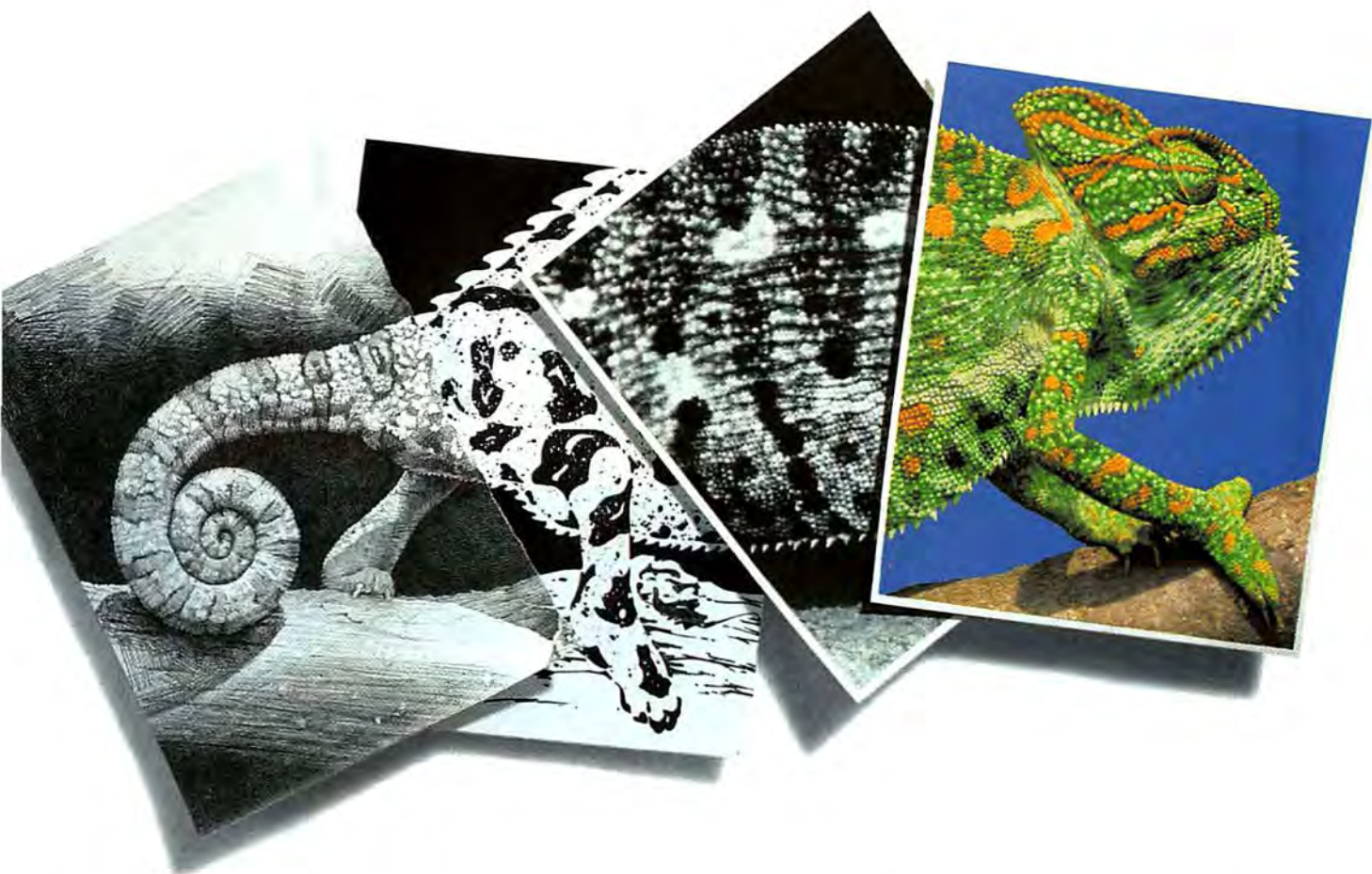


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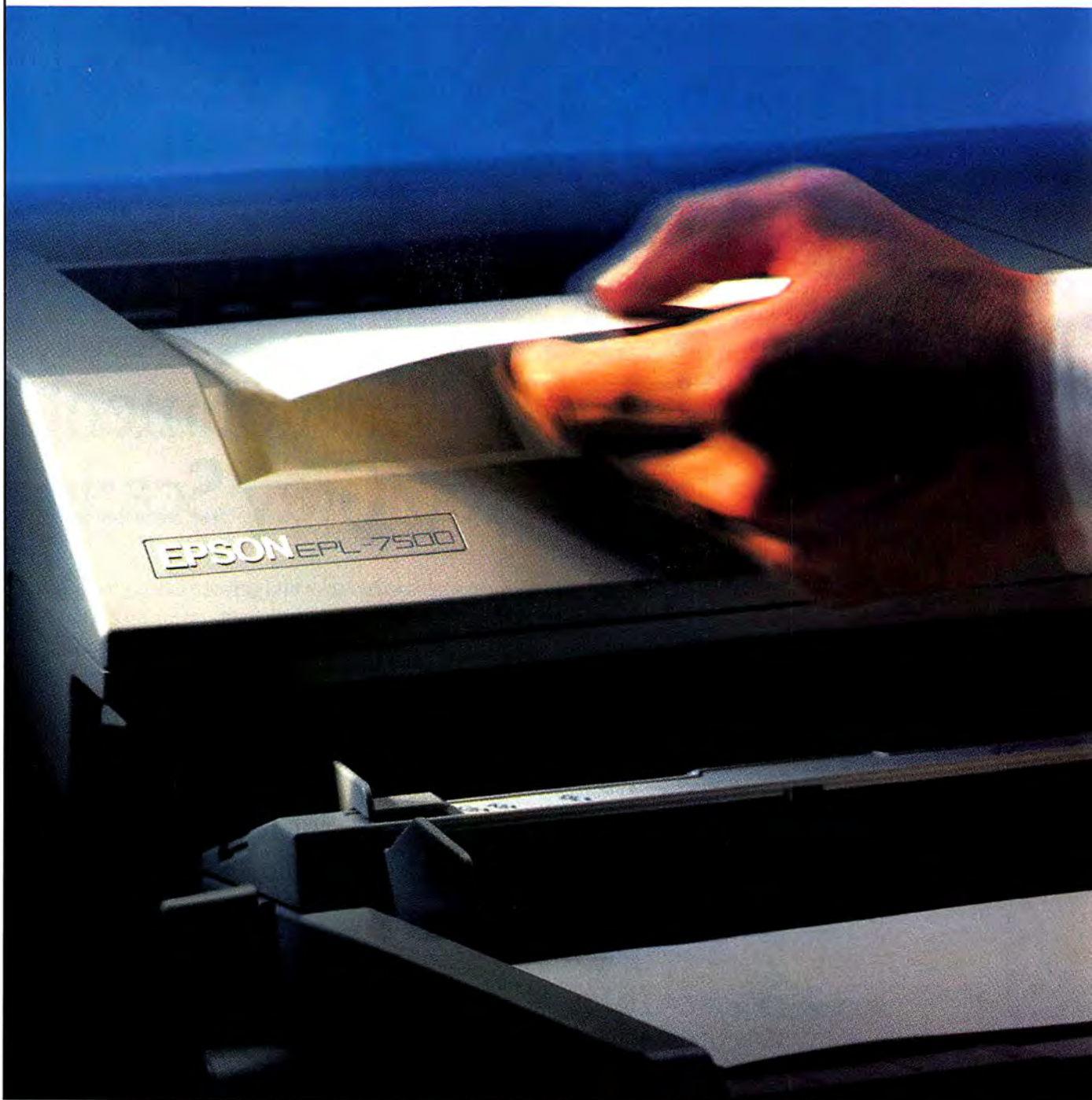
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Fixing the CDEF requires a little more work on your part. You have to support two new messages, `calcCntlRgn` and `calcThumbRgn`. Here's where you have to make sure that you're System 7.0-compatible, not dependent. Your CDEF

still needs to support the old `calcCRgns` message. System 7.0 won't send this message — only System 6.0 and its predecessors can — so your CDEF is still free to clear the upper byte of the handle when it receives `calcCRgns`. When System 7.0 is running in 32-bit mode, it will send

either of the two new messages. You still calculate the appropriate regions for these new messages, but you don't clear the upper byte of the handle when you return it.


### Striptease

What if you're running in 24-bit mode and want to compare the values of two master pointers? In 24-bit mode, the Memory Manager changes flags in the upper byte of a master pointer, so your program should use only the lower 24 bits of the pointers during the comparison. But in 32-bit mode, all the address bits are significant, so you'll want to compare all 32 bits.

The solution for this situation is to call the Memory Manager routine `StripAddress` on the pointers before comparing them. The `StripAddress` routine returns a pointer's significant value, based on the current Memory Manager mode. For example, when passed a pointer when the Macintosh is in 24-bit mode, `StripAddress` masks the upper byte in the returned address. But in 32-bit mode, `StripAddress` returns the address unchanged.

You will rarely need to use `StripAddress`. Don't call it every time you use an address — that would choke your application. Use it only when you need to compare two master pointers (a practice of dubious merit) or in the uncommon instance in which your application switches the machine from 24-bit to 32-bit mode.

If you follow the techniques outlined in this column, then you've met System 7.0 halfway. Your application may not support any of the new features in the new release, but it won't embarrass you by bombing either. Once your application's in this state, you can confidently call it System 7.0-friendly.

Your final step in bringing your application from friendly to compatible is to support those features that are the hallmark of System 7.0. Unfortunately, we've run out of space, so we'll have to continue this discussion next month. Fortunately, however, we have "virtual-column space" on *MacUser's* on-line service, Zmac. This month and next, you'll find some example code fragments on Zmac that demonstrate System 7.0 compatibility issues. If you're not a Zmac subscriber, you can get a disk containing these examples from Kurt. Please send a check for \$15 to Kurt W. G. Mathies, 1150 Hancock Drive, Boulder, CO 80303. 

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*You can also contribute tips electronically via Zmac, the on-line service for MacUser. Send your tips to Gregory Wasson at 72511.36. Be sure to include your full name and mailing address along with the text of the tip.*

**Compiled by  
Gregory Wasson**

### ResEdit

If you dislike those INIT startup icons goose-stepping across your startup screen and the programmers didn't see fit to give you the option of disabling the icons, there is a simple solution: You can change the icon ID number, using an icon editor such as Icon Designer or a resource editor such as ResEdit, thereby eliminating the startup icon without affecting the INIT itself.

Use a consistent pattern when you change the numbers so that you can restore them later if you need to. For example, change ID number 128 to 12800 or change ID number -4023 to +4023.

The patterns you use don't matter — just be consistent. After you've changed the ID numbers, your startup screen will be untroudden.

Rob Sprecher  
Cleveland, OH

Digitized-sound resources are fun but are also often very large and expendable. If you're running short of disk space or if you're looking for ways to reduce telecommunications time, you might want to use ResEdit to locate the snd resources on a copy of the application or stack (see Figure 1). Delete the resource, save the program, and make sure the program still works. The About box or startup screen might be less entertaining, but the program will be lots leaner.

Dave Valiulis  
Scotts Valley, CA

### Word 4.0

I've seen several solutions published for making Word 4.0 data files easier to manage — a recent one even advocated using Microsoft Excel to organize the information. An easier

and more straightforward solution is to keep data in a Word 4.0 table.

From scratch, simply type your merge field names on a single line, separating them with tabs. Select the line by pointing in the left area of the window and clicking once. Now, from the Document menu, select Insert Table, and accept the defaults presented to you. Your data is now in an easy-to-manage grid, one that changes height as you enter data.

To enter data, click on the last cell in the row and press Return — a new row is started, and you can start entering your merge data.

If you don't like the column widths, you can change them: Click on the Ruler icon in the ruler, and T markers appear; shift these markers around until the table suits you. You can also change the page setup to landscape instead of portrait, because only the characters in your table — not their format — will be merged.

If you're merging from a database such as one produced in FileMaker, the process is even easier: Select the entire document you've exported from your database (Command-click in the selection bar or press Command-Option-M), and choose Insert Table from the Document menu. FileMaker can output data in the exact format Word needs to produce a merge document, and the Table feature organizes the information so that you can see what you have without having to wade around in all those defaulted tabs.

Matthew J. McCaffrey  
Haverhill, NH

I'm sure I'm not the only person who uses Word 4.0 and a NEC daisywheel printer. Anyone else who does is probably finding that the 12th line of text on a page often prints over

## Tip of the Month

### Word 4.0

Microsoft Word 4.0's standard glossary entries for dates make it hard to insert dates with a month/day/year (March 29, 1991) format. Word insists on inserting the day of the week for you unless you choose the short numeric format (MM/DD/YY). Here's a macro you can put together in your favorite macro utility that inserts the current date in the one format — the most common one, of course — that Word can't provide.

1. Place the cursor where you want the date inserted, and make sure the numeric keypad is turned off (it's controlled by the Num Lock key).

2. Choose your keystroke for the macro (I picked Control-D on my extended keyboard), and start recording.

3. Press Command-K. This gives you the standard Glossary window.

4. Click on "date - now - long" or on "date - abbreviated" if you prefer the abbreviated month name. (Don't use the "date - print -" entry, because it's not editable.)

5. Click on the Insert button. Then press Command-left-arrow four times, and press Command-Option-Delete twice. This deletes the day name from the entry.

6. Press 1 on the numeric keypad to bring the cursor to the end of the line.

7. Stop recording, and store your macro.

This macro works even when you move the Glossary window around on the screen. If you insert a new entry into the standard glossary that appears above the date entry, however, you'll have to redefine the macro.

Raju D. Kunjummen  
Los Angeles, CA



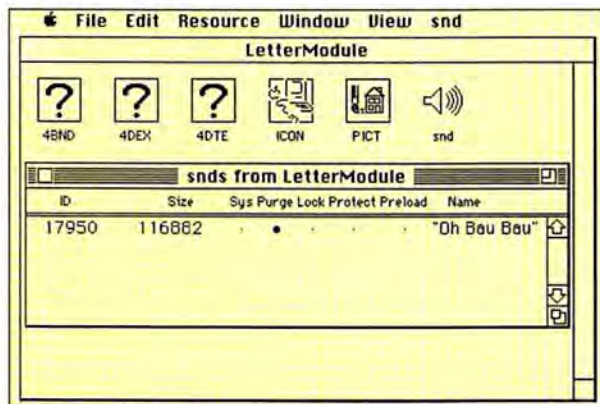


Figure 1: You can make applications and data files leaner and faster by removing unnecessary sound resources. This 4th Dimension database file was trimmed by 100K by removal of a single snd resource with ResEdit 2.0.

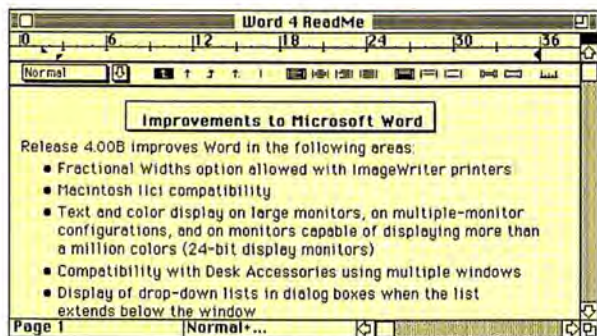


Figure 2: Word 4.0's character styles aren't limited to characters. You can create this attractive title box by adding outline and shadow styles to text that's been copied to the Clipboard as a graphic and then repasted into a document.

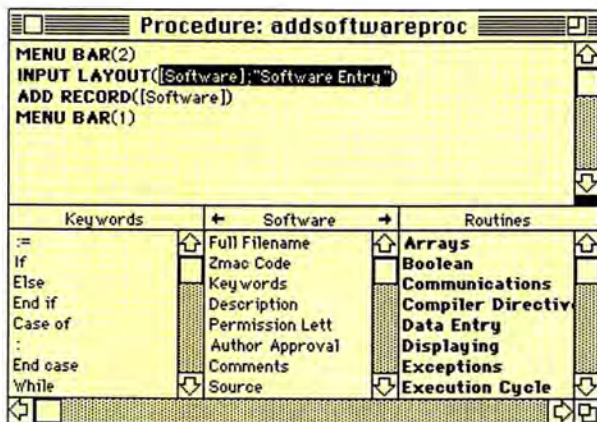


Figure 3: 4th Dimension users can speed up calling a layout from within the procedure editor by highlighting the names of the file and layout and pressing Command-L.

the 11th line. This didn't occur with versions 1.5 or 3.1.

For a while, I counted down 11 lines and then inserted a blank line to overcome the problem. Finally I found a better solution. The NEC printer uses a pitch of 12. If you choose the Paragraph command from the Format menu (Command-M) and replace Auto in the Line Spacing box with -12, the overlapping stops.

Maxwell J. Richards  
Palm Bay, FL

One useful aspect of Word's style-sheet feature is its ability to assign a space before and/or after a paragraph to a style. A space before and after in a style definition lets you maintain consistent spacing between elements such as body text and section titles throughout a document.

If you assign Space Before to a style, however, and a paragraph with that style begins at the top of a page, Word adds the extra space at the top of the page, leaving a gap. As a result, the top margin for that page appears to be shifted down, making it inconsistent with the other pages. Unfortunately, the only way to avoid this unwanted result requires manual labor:

1. Place the cursor in the paragraph with the unwanted space.

2. With the Paragraph command, change Space Before to 0 points.

Word removes the extra space at the top of the page.

Note: Because page breaks can change while you're editing a document, it's wise to wait to make this correction until you're ready to print a final draft.

Mike Walsh  
Philadelphia, PA

Just about any currently available word processor offers a variety of ways to format words to make them stand out from the main body of the document. But what do you do

when underlining or boldface or even something as exotic as a shadow doesn't fit the bill? Try a box! Here's how:

1. Select and format the text to be boxed. (Note: After it's been boxed, the text itself can't be reformatted.)

2. Use Command-Option-D to copy the selection to the Clipboard as a graphic.

3. While the text is still highlighted, use Command-V to replace it with the graphic image of the copied selection.

4. Click on the graphic to select it, and box it in by choosing the Outline style from the Format menu (Command-Shift-D). You can also add shadow or boldface format to the outline style for extra emphasis (see Figure 2).

The secret here is that the style commands don't work just with text — which is what most people assume — they also work with graphics.

If the boxed text is on a line with other text, it will sit higher, because the bottom of the box sits even with the baseline of the text on that line. To correct this, select the graphic, choose the Character command from the Format menu (Command-D), select subscript, and offset the text as needed (the larger the font size, the greater the offset required).

Rich Murphy  
Oak Harbor, WA

You can use PostScript code to shade a cell in a Word 4.0 table by typing:

```
.cell  
.75 setgray  
wp$box fill
```

and pressing Enter. Then select the text, and format it with the PostScript style by pressing the Shift key and selecting Define All Styles from the Format menu. You can replace the number .75 with whatever number you choose. Make sure that you have deselected Print Hidden Text in the Print dialog box.

Alison Moore-Smith  
Orem, UT





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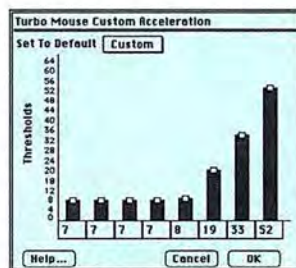
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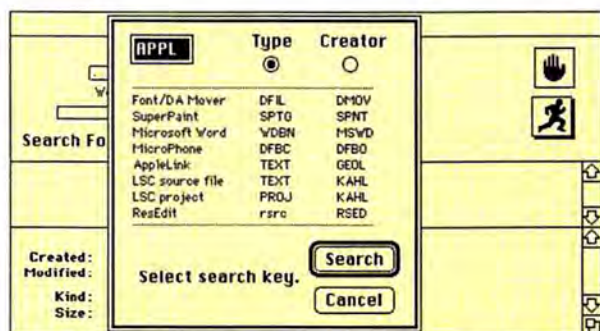


Figure 4: A hidden command in The Norton Utilities' Fast Find DA lets you search files by their creator or type codes.

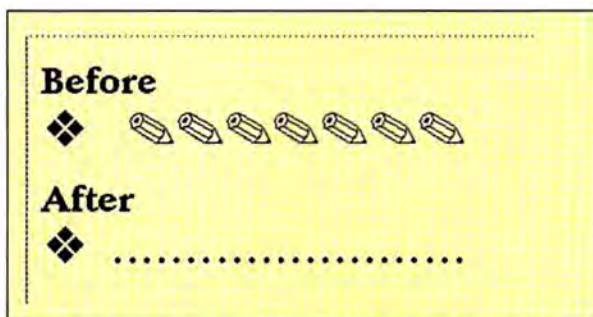


Figure 5: PageMaker 4.0's dot leaders turn into pencil icons if they're adjacent to a character in the Zapf Dingbat font (top). A simple trick zaps Zapf (bottom).

### Panorama 1.5A

I read with interest the tip from David D. Good on page 272 of the November '90 issue. His tip works, but there's an even better way to create a database with more than 256 fields in our Panorama program. In fact, there are two better ways.

You can put cells onto a form by using Auto Cell Layout from the Arrange menu. That dialog box uses the Apple List Manager and is good for about 500 items. The scrolling window updates much faster than the pop-up menu, and you can select one or more of the cells you want.

Or, you can create an auxiliary database that duplicates cells beyond the 256-field "limit." The first item in the auxiliary database is the first item beyond the main database's pop-up menu (in other words, item number 257). You can then simply copy and paste these cells from the

auxiliary database to the main database.

Both of these methods will give you cells beyond the 256-field limit before the pop-up menu with 256 items can even draw itself.

Paul W. Chance  
ProVue Development  
Huntington Beach, CA

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23 MAC



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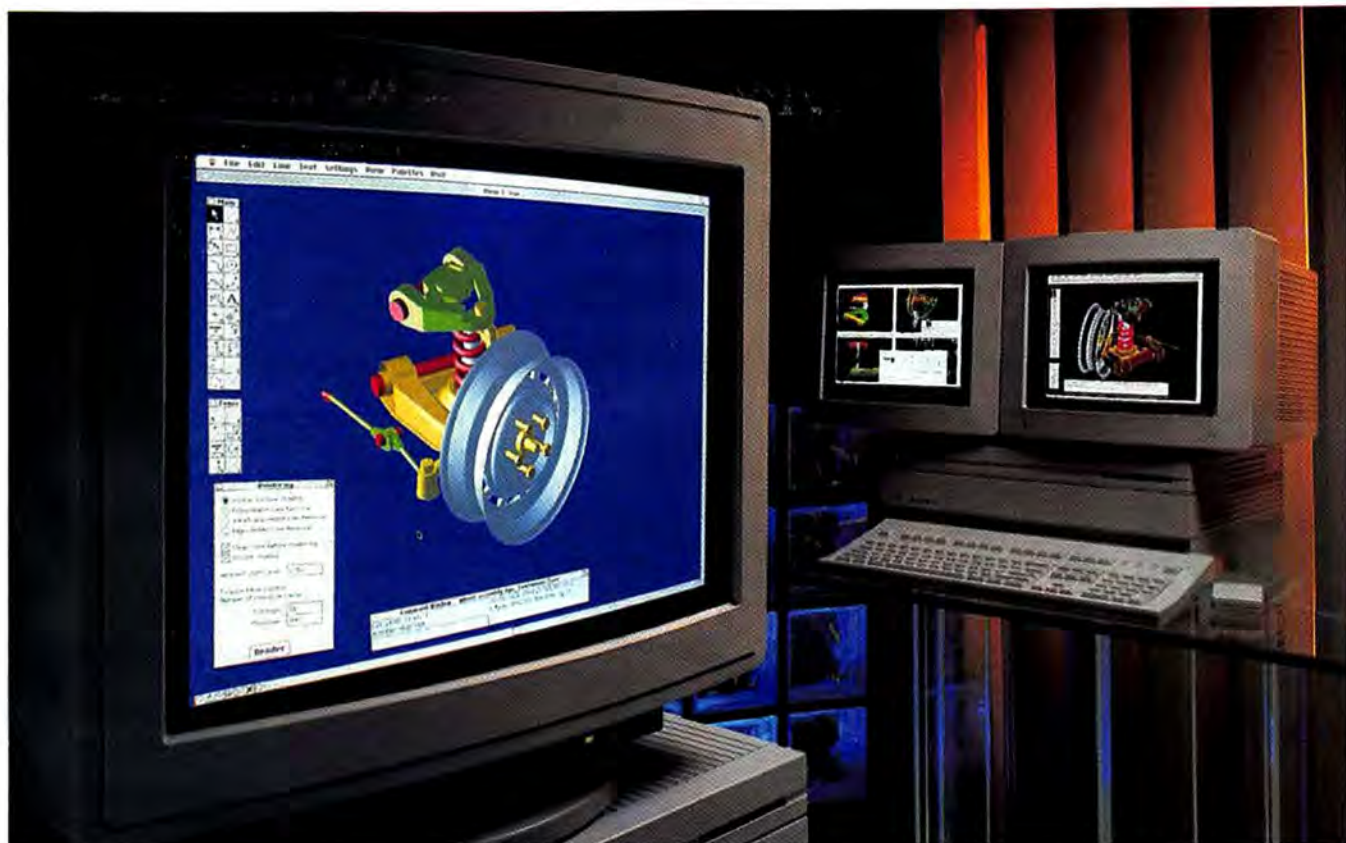
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#### 4th Dimension

When you're programming procedures in 4th Dimension, it's sometimes useful to call up a layout you've referenced in a procedure. Here's a shortcut that bypasses going through menus.

While you're in the procedure editor, drag to highlight the filename and the layout name mentioned in a procedure (see Figure 3). Then press Command-L. 4D will automatically open the highlighted layout.

Douglas von Roeder  
Colorado Springs, CO

#### Norton Utilities

When you're using The Norton Utilities for the Mac's Fast Find DA, Command-T gives you access to a dialog box that allows you to search by type or creator (see Figure

4)—a useful feature for power users that's not mentioned in the manual.

Mark Millard  
Sacramento, CA

#### QuarkXPress

I've found that version 3.0 of QuarkXPress won't boot if you have your keyboard configured with MacQwerty, from Paragon Concepts, in the Dvorak layout.

To get QuarkXPress 3.0 to work with MacQwerty's Dvorak keyboard, go to the Control Panel, choose Keyboard, and select U.S. (this works only if you have installed MacQwerty). Close the Control Panel, and launch QuarkXPress. Go back to the Control Panel, choose Keyboard, and select Dvorak. You can now type away in QuarkXPress without sacrificing the sanity

provided by the Dvorak keyboard layout.

Rob Haiber  
Poughquag, NY

#### On Location

Using On Location is a dandy way to keep track of what's on your hard disk, and it's even dandier for programmers. For example, if you have megabytes of sample source code scattered throughout thousands of files, you can use On Location to fully index these files.

When you need an example of how to use any function, just call up On Location and search for all the references to the function from the source-code collection. This also lets you view the text in each sample source-code file and cut and paste the sample into your own program. It's fast and a great

way to make your programming more efficient.

David Kramer  
Montreal, Quebec  
Canada

#### PageMaker

When using tabs with dot leaders in PageMaker (3.0 and 4.0), the dot leaders take on the text format of the character to the left of the tab. Therefore, if you use a Zapf Dingbats character just before the leader, the dots become little pencil icons.

It isn't possible to select the dots and change their typeface format separately. To avoid this problem, press Option-spacebar just before the tab. Then select this special nonbreaking space character and format it so that the dots appear as desired (see Figure 5).

Doug Smith  
Boise, ID

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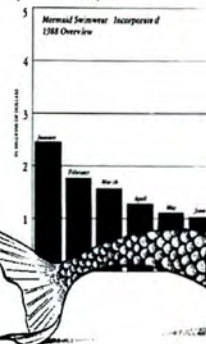


## Sales flounder early

**T**o our shareholders:  
Net income for Mermaid Swimwear Incorporated in 1988 increased 4% from 1987.

**Highlights of Operations**  
The premier performer was a new line of MerMax and MerKid swimwear designed by Karina Zapata, a world-renowned designer of women's sportswear. Test marketed in the Northeast territory was the MerMax swimwear line, proposed by my wife. The line was only moderately successful, and the line was pulled from stores two weeks after its introduction. The company realized a substantial boost to profits from Grouper's Undersea Adventures, a subsidiary company specializing in cruise/cuba diving vacations. The firm's president and head cruise director, Rick Grouper, reported interest in this leisure activity is at an all-time high. He also noted that the business was not negatively affected when one of the firm's cruise ships, captained by a former crew member of an oil

tanker, ran aground and caused a huge fire on the southern tip of Cuba. Setting New Courses  
In June of 1988 we acquired

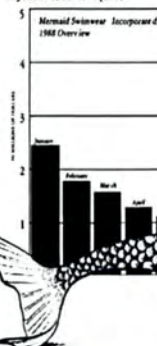


## Sales flounder early but surge in 2nd half

**T**o our shareholders:  
Net income for Mermaid Swimwear Incorporated in 1988 increased 4% from 1987.

**Highlights of Operations**  
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J. P. Wainwright  
Chairman of the Board and Chief Executive Officer

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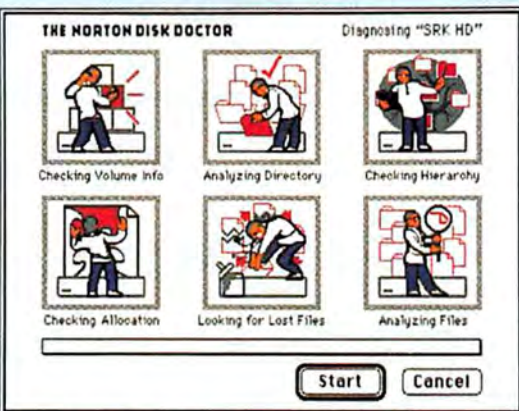
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- ▶ UnErase
- ▶ Speed Disk
- ▶ Format Recover
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By Bob LeVitus and  
Andy Ihnatko

### Legal Disclaimer

**Andy:** Before we get on with this month's Cornucopia O' Questions, a clarification. I may have oversimplified things last month (February '91, page 315) — purely in the interests of clarity, I assure you — when I said that you have the “absolute right” to resell software you've grown sick of.

Although this is true for all practical purposes, in the World of the Law, it just ain't so. To avoid giving you some rights that the Software Cadre would rather you didn't have, they came up with a high-scoring Legal Concept: Instead of selling you the software itself, they're selling you a license to use the software; technically, the disks still belong to the corporation that spawned them.

The Concept and the limited rights the corporation gives you as the licensee are explained fully in the licensing agreement that accompanies almost all software. You can usually find it printed on the sealed envelope containing your (oops... I mean “their”) disks. The Agreement is supposed to be a binding legal contract that you “sign” by ripping open the envelope.

I said that those agreements may not be enforceable, and that's true. Maybe the agreement doesn't allow you to make a backup copy of the software (which the copyright law specifically allows you to do). Maybe it doesn't give you a way to say “no” to the agreement and send the unopened envelope back for a refund. Or maybe somewhere in the manual, the company thanks you “for purchasing this software” (i.e., the software itself). These are all loopholes that high-powered attorneys can exploit to try to render a licensing agreement invalid.

But only a real legal weenie would care

about all this. I've called another dozen software companies since last month, and I still haven't found anyone who gives a flying Belgium if you sell your software or not. If you are a legal weenie, check out *Software Protection: Practical and Legal Steps to Protect and Market Computer Programs* by — doesn't this sound like the name of a lawyer — G. Gervaise Davis III, Esq. (New York: Van Nostrand Reinhold Co., 1985). It's a thorough and well-written guide.

### Virus Medicine

**Q.** What is a virus, how do you get one, and can you get one by downloading files from a BBS?

Albert Pearson  
Des Plaines, IL

**Bob:** A virus is a piece of software that infects applications or files. When you use an infected application or file, the virus spreads to your System Folder or other software. Viruses spread from Mac to Mac through the sharing of infected applications or infected disks. Currently more than ten strains affect the Mac (see Figure 1).

Viruses usually aren't transmitted to your System Folder or software unless you open the infected file in the infected application or disk. Some strains (such as WDEF and CDEF) are more virulent, however — the moment you insert an infected floppy, the virus infects all unlocked and mounted disks.

Although it's possible to get infected by a file that you've downloaded, the commercial on-line services — such as CompuServe, GENie, America Online, and Zmac — are careful not to allow infected files into their download libraries. Private bulletin boards, however, might not be as cautious.

### \*... But Were Afraid to Ask

Got a question so simple you're embarrassed to ask it? Don't be shy! Send it on in. We'll even change your name and city to that of a member of Congress to shield your identity if you want. C'mon!

**Q.** I'm confused about the Undo command. All my Mac programs have it, but it doesn't always work. Sometimes (usually after I've “Done” something stupid, of course) it says “Can't Undo.” Sometimes it tells me what I'm “Undoing,” and sometimes it doesn't. Huh?

U.S. Rep. Tom Campbell  
(R-Calif.)

**Andy:** The Undo command acts so screwy because it isn't a “standard” feature. Apple made up all kinds of rules for how a Mac program should behave: Thou shalt use menus, thou shalt put stuff into windows, thou shalt allow the user to Undo things, and so on. Whenever

programmers violate these User Interface Guidelines, Apple executives pile into their Mercedes-Benzes and go over and whack them in the knees with baseball bats, thus ensuring a Consistent User Interface.

To further help programmers follow all these rules, Apple wrote all the menu-drawing code, the window-drawing code, and the button-making code itself and burned these routines into the Mac's ROM. Features such as Cut, Copy, and Paste all work the same way because they're all done with the same built-in code; the programmer just has to use that built-in routine.

Undo is different. Because it isn't burned in, all programmers have to write their own special Undo-ing code for every program they write! So some programs have these slick Ninja routines that can Undo everything, while others, well, orally evacuate raw chicken embryos.



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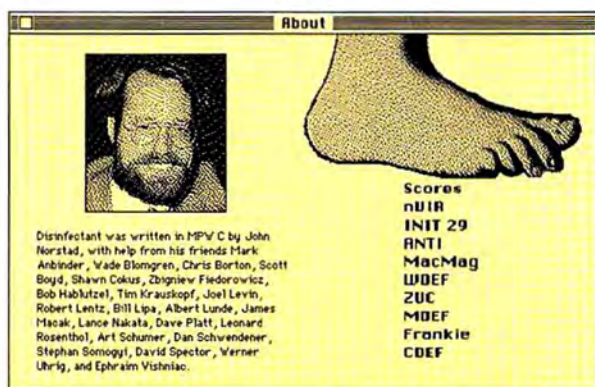
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**POWER TOOLS  
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**Figure 1: Disinfectant kills viruses dead, and it's free. This Monty Python-inspired About box lists the viruses (right) that the latest version can eliminate.**

If you're at risk — you use disks that have been used in another Mac or download files from questionable sources — you *need* virus protection. Don't wait until after you've become infected — get it *now*.

Almost all the available antiviral products check your disks for existing infections, repair infected files (or tell you which files are infected so you can replace them from locked master disks), and install an INIT that prevents future infection by alerting you if you've inserted an infected disk or launched an infected file.

The three commercial virus-detection products I've tried — SAM, Virex, and Rival — are all extremely effective. I've never become infected while using any of them, although I've been alerted more times than I care to remember. The best thing about these commercial antiviral products is that for a small fee, you can have upgrades automatically sent to you whenever a new virus is discovered.

For those who have a modem and don't want to buy an antiviral program, Disinfectant is the best noncommercial product around. It's freeware — a labor of love by John Norstad (Academic Computing and Network Services, Northwestern University, 2129 Sheridan Road, Evanston, IL 60208). You can download a copy from Zmac or other on-

line services or send John a blank, *formatted* floppy disk with return postage. Bear in mind that because new viruses are discovered regularly, you'll have to download the latest version of Disinfectant each time a new one crops up. Still, Disinfectant is strong medicine, and the price — free — is right.

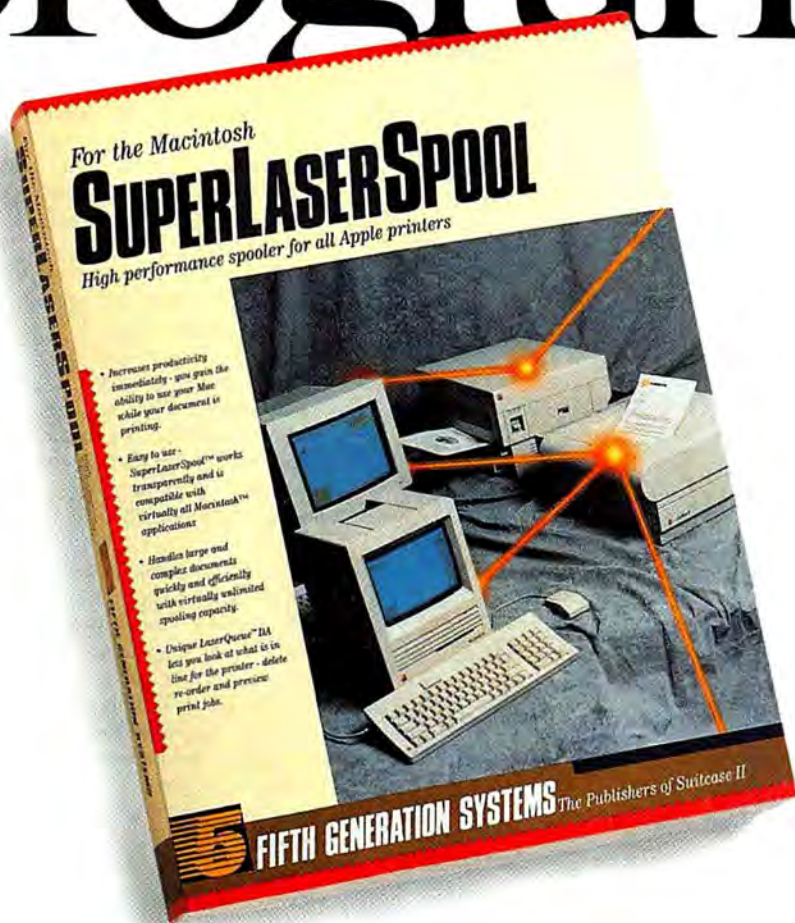
**Andy:** Well, Bob, my virus mind-set is a little different. Personally, I think that anyone who actively worries about viruses (as opposed to simply being aware of their threat) is nuts. I worry more about a grand piano being dropped on my head. There's too much worry about these things; just last week, I saw a new book on *The Virus Problem*, written by a guy who thinks that any program you didn't actually write yourself must be a beehive of viral activity!

The thing is, unless you're in a high-risk group (more on this in a sec), viral infection just isn't all that likely. And even if you *do* become infected, in most cases, you can completely annihilate the infection in about 30 seconds, with no loss of data.

I'll even go so far as to say that Disinfectant is all you really need to combat *The Virus Problem*. The application detects and removes all known viruses, and the INIT prevents further infection by all known viruses. To top it off, its documentation is probably the best



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## POWER TOOLS HELP FOLDER

common-sense guide to The Virus Problem available. What more do you need? Some folks worry that Disinfectant does nothing to protect them from new, unknown nastiness, but I don't think this is of great concern. New versions of Disinfectant spread across the country a hundred times faster than new viruses do. I mean, come on — Disinfectant can even eradicate Frankie, a European virus that *infects only Atari-based Mac clones!*

Commercial antiviral programs such as SAM have some nifty extra features, such as automatically scanning all floppies for viruses whenever they're inserted into a drive, but they're generally just frosting on the cake. Me, I'd rather blow that 70 bucks on some games, but if you want to spend it on a commercial utility, I don't think that's an inherently bonheaded idea.

Now about those high-risk situations. Anyplace where folks you don't know bring in disks from God-knows-where and work on a common hard drive is a veritable Disneyland for viruses. Scan your disks carefully with an antiviral program after exposing your disks to such environments — college computer labs, DTP bureaus, bus-terminal snack bars, and so on. If you rent equipment, be sure to scan or reformat the computer's hard drive before using it with your own volumes.

An even riskier situation is a network with shared volumes. If a central AppleShare volume becomes infected, every hard drive of every Mac on the network can become infected. Here the commercial packages have a jump on Disinfectant; utilities such as SAM can be set up so that no diskette can be mounted unless it's been scanned for viruses.

### Head Games

**Q.** I'd really like to know the best way to clean a floppy-disk drive and how often it

should be done. Queries to Apple and Sony have yielded the usual "Call your dealer," and, "Well, what I do is . . ."

Robert S. Wilks  
Loveland, OH

**Andy:** Sorry to let you down, Robert, but all I can do is tell you what I do!

Background: The read/write heads of your floppy drive can be a real cause of trouble. Dirt and dust from the environment and your floppies themselves tend to accumulate on them, and if the heads get too cruddy, they won't be able to read and write effectively, causing your Mac to report endless disk errors ("This isn't a Mac disk, Bub — care to format it?"). The more Everest-like mounds of dirt can actually gouge the surface of your floppies, permanently destroying your data. So it's important to give the heads a cleaning every once in a while.

To clean the heads, just buy a head-cleaning disk. It looks like a standard disk, but instead of magnetic material, it contains a circular cleaning pad. You put a few drops of cleaning fluid onto the pad and pop it into the drive. The Mac munches on it for a while, spinning the pad against the read/write heads. Once the Mac realizes it isn't a Mac disk, it spits it back out.

You shouldn't be too gung ho about head cleaning, though. The cleaning pad is much more abrasive than a regular floppy, and if you embark on a daily or even weekly cleaning scheme, you may wind up scratching the heads before long. How often should you do it? My service manuals say "every 150 hours of operation" — real helpful, eh?

Here's my regimen: I clean the heads whenever my Mac reports a disk error and I have no clue why. When a drive suddenly decides that a formerly healthy diskette is unreadable, it's a fair bet that the heads just need cleaning. Then, even if your diskette really was



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messed up, at least you'd know your heads were clean. Just try not to get in the habit of cleaning more than once a month or so.

I've also heard that by pressing the drapery attachment of your vacuum cleaner against the drive slot, you'll suck any dust and hair out of the mechanism. Probably won't hurt, and it certainly wouldn't be the *weirdest* thing people have done with vacuum cleaners.

**Bob:** I called a couple of Apple dealers myself. The first one described head-cleaning disks as "the kiss of death" and claimed he'd never recommend using one, because the tolerances on a floppy drive are so critical that the cleaning disk can easily cause problems. The second one said, "The best method is to take the drive apart and clean it with cotton swabs and alcohol. If you have to use

one of the cleaning disks, don't use it very often — no more than once every couple of months. Or, for less than \$50, bring it in and have it cleaned by a trained technician."

So there you have it — another nonanswer. I don't know if the cleaning kits are or aren't dangerous, but I'd rather be safe than sorry.

Finally, although I was a little squeamish about sticking a vacuum cleaner up to my disk drive (quite frankly, I thought the idea sucked), my friendly Apple dealer (name withheld, just in case your drive gets sucked through the slot) assures me that the suction created by your average household vacuum cleaner isn't strong enough to damage a floppy drive and might indeed clean out some dust.

You learn something new every day.

#### **Word 4.0 PostScript Style**

**Q.** I've attempted to use PostScript commands to suppress the test page that the LaserWriter IINT produces when it's first turned on.

My Apple dealer gave me a set of two commands, which he claimed would stop test-page printout. Following his instructions, I proceeded to do the following:

While in Microsoft Word 4.0, I created a document that contained nothing but the lines in Example 1.

I formatted all these characters as hidden text. Then I printed the document to the LaserWriter.

No page was emitted, because there was nothing but hidden text. So far so good. Next I turned the printer off, waited a minute, and then turned it on again. No test page was printed. However, when I next issued the Print command to print a document, an alert box appeared, saying that the printer would not respond. Immediately thereafter, a test page was emitted. After I issued a second Print command, my document was printed successfully. I've tried this several times with the same result.

Roger Wm. Wicke  
Hot Springs, MT

**Bob:** I think I see what went wrong. Your code is correct,

#### **Example 1**

```
serverdict begin 0 exitserver
statusdict begin false setdostartpage
```

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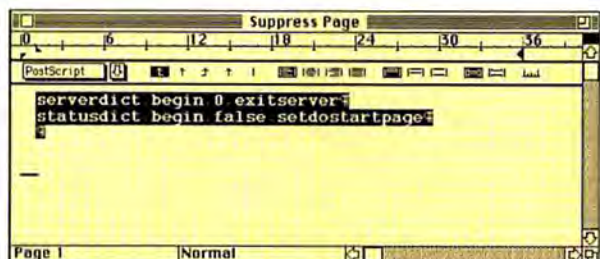


Figure 2: Adding PostScript programming power to Word 4.0 requires the PostScript style. If you type **PostScript** into Word 4.0's style box, the program automatically adds it to your style sheet.

but you need to format the text with the PostScript style instead of Hidden Text. To do this, select the text and then type **PostScript** in the style box in the lower left corner of the ruler (see Figure 2).

Perhaps the easiest way to kill the test page is to pull the paper tray out just a little before you turn the printer on. If you reinsert the paper tray after the printer warms up, it will be

ready to print, without the inconvenience and paper waste of a test page.

**Andy:** If you ever want to turn the test page back on, just change the **false** in your second command to **true**. There are also some shareware and commercial utilities that switch the test page on and off, most notably CE Software's Widgets program.

Incidentally, you may want

to check out Apple's *LaserWriter Reference* and Adobe's *PostScript Language Reference Manual*. They contain other PostScript commands and conditions for manipulating LaserWriter features.

### Changing LaserWriter Defaults

**Q.** Is it possible to modify the LaserWriter file, say using ResEdit, to change the default settings of the radio buttons in the Print dialog box? I'm using LaserWriter driver 6.0, and I would like the default print mode to be Black & White instead of Color/Grayscale.

Philip Broussard  
Washington, DC

**Andy:** First, make a backup copy of the LaserWriter driver. That way, if you somehow mess up with ResEdit and set fire to the file, your tuchas is covered. Launch ResEdit, and

open the LaserWriter driver.

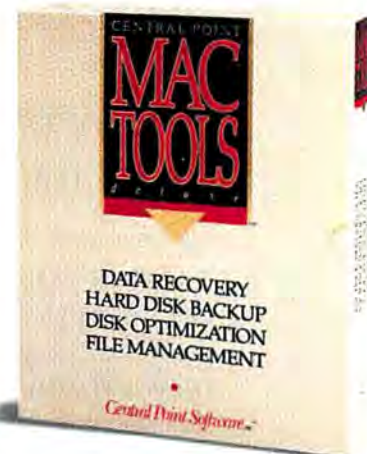
Lunge straight for the PDEF resource with ID = 4. Set out on a search for the series of bytes **377C001700047801** and replace that series with **377C001800047801** (see Figure 3). Save your changes, and you're done — from now on, the default setting will be Black & White.

This technique ought to work with all 6.0x versions of the LaserWriter driver. My thanks to Paul Cozza for the search string.

**Bob:** By the way, there's a new version of ResEdit out (2.0b2 at press time) that's much cooler than the 1.x series. It features an icon-based interface and much less intimidating editors for most resources. You should be able to find a copy in most of the usual places — CompuServe, GENie, America Online, and Connect.

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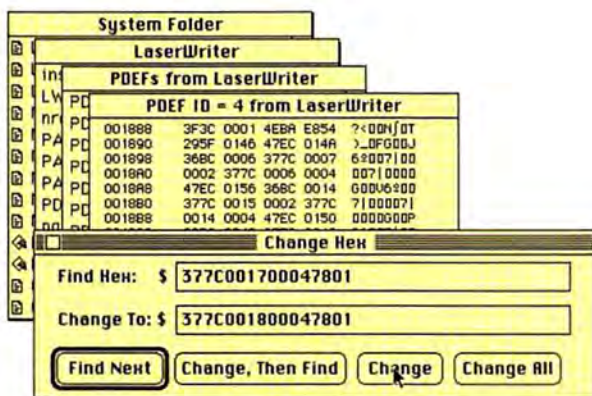


Figure 3: You can use ResEdit to modify the LaserWriter driver so that Black & White printing becomes the new default setting in the standard Print dialog box.

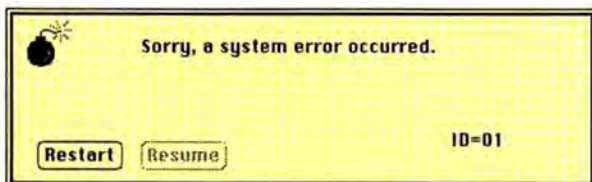


Figure 4: Here's one way to tell when your Mac is "hopelessly crashed."

### Whose RAM?

**Q.** I've been told that it's better to use genuine Apple SIMMs in the IIx. Is there really any difference between Apple and third-party SIMMs for the IIx?

S. Mitchell  
Tyler, TX

**Bob:** To get both sides of the story, I queried a third-party SIMM maker (Technology Works) and Apple. Mike Frost at Technology Works, replied, "Hogwash. Third-party SIMMs are better — they're less expensive, and most vendors have a better warranty than Apple's. Apple doesn't even make its own SIMMs; it buys them on the open market from a variety of sources."

That was no surprise — I'd expect a third-party vendor to claim that his RAM was better. But the Apple spokesperson confirmed it by saying, "There is no technical reason why our DRAM is any better than third-party DRAM. We've published the specs for the SIMMs, and they're turning

up all over the place."

So save yourself a few bucks, and get your RAM from a reputable third-party supplier. I have Technology Works SIMMs in my IIx — they work great, and they have a lifetime warranty.

### SIMMs, Fans, and Delays

**Q.** I recently installed a Dove MacSnap 2-megabyte upgrade on my Mac Plus. Installation instructions were provided, and the procedure was quite simple and straightforward. My concern is that it now takes about two or three times as long for the smiling Mac icon to appear and for the computer to start loading the System software from my hard disk.

The problem has gotten worse since I installed an additional 2 megabytes of RAM, bringing my total to 4 megabytes. In fact, I timed the delay from the moment I turn on the Mac to the moment the smiling icon appears — it took about 33 seconds. Is something



wrong? Before I installed extra RAM, it took only a few seconds for the smile to appear.

Also, I'm concerned about heat being generated by these SIMMs. Do they generate extra heat? If they do, should I install a fan?

Mazen Ansari  
Monterey, CA

**Bob:** The delay you're experiencing is entirely normal. When you start up any Mac, it performs a check of all the installed memory. The more memory you've installed, the longer the memory check takes. Dove says that the amount of additional heat generated by the RAM you added to your Plus is negligible; you don't need a fan.

**Andy:** I'm a little more wary. The power supply of the Plus is infamously wonky; average life expectancy (according to an informal poll) is roughly

three years. If you have a properly calibrated power supply, the extra SIMMs probably won't harm anything.

Unfortunately, "proper calibration" is somewhat Grail-like; I've seen figures that say that the voltages can be off by as much as 20 percent! In these cases, 4 megabytes of RAM might be the silicon that breaks the power supply's back (because of additional heat or additional drain).

My prejudiced opinion is that any Plus with 4 megabytes of RAM or any kind of daughterboard (such as a portrait-display card) should have a fan. Fans go for about 60 bucks, which isn't so bad when you consider that a power-supply transplant can set you back a couple hundred.

#### Hopelessly Crashed?

**Q.** Last May you suggested

using the programmer's switch only when the Mac is "hopelessly crashed."

How do I know if it's hopeless? Or is it a case of "if you have to ask . . ."

Douglas Wells  
Vienna, IL

**Bob:** Well, Douglas, if you have to ask . . . Actually, that's a good question. The most obvious way is when you see a dialog box such as the one in Figure 4. That is most definitely hopeless. Another way is when nothing happens when you type or move the mouse. Still another is when the screen starts to shimmer and display static. If any of these occur, press the Interrupt switch (check your user manual to see where it is on your computer) and type


**SM 0 A9F4 <return>**  
**G 0**

If it worked, which it does at

least half the time, you'll be returned to the Finder, where you can select Restart from the Special menu, giving your Mac a chance to shut the file system down properly and minimizing the risk of damage to disks or files.

If it doesn't work, you're no worse off than before. Just reset your Mac as you normally would — turn the power off and on, or use the Reset switch.

As long as you use the Reset or Interrupt switches only when your Mac is hopelessly crashed, it is as safe as turning your Mac off and on, and possibly safer.

**Andy:** That code's a new one to me; I'll have to jot it down. Another interrupt parachute is to type **G FINDER <return>**, which, like Bob's code, works sometimes. I don't know which one works better, but at least mine's easier to remember. 

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From our economically priced Standard enclosures to the largest capacity drive in our Premium enclosure, Third Wave offers the most complete line of drives for the Mac. Premium enclosures offer virtual silent fans, easy terminator access, and high quality metal chassis construction. Other features include international power supplies, zero footprint design, and good looks. You get what you pay for when you buy a storage system from Third Wave Computing.

### •Performance Backup Systems

Tape backup systems from 60mb to 2.3GB capacity. Award-winning RetroSpect software is the heart of all our systems, offering the highest performance (from 3mb/min. to 14mb/min.) and most features of any backup software on the market. Network backup using RetroSpect Remote also available.

### •Best Removable & Combo Systems

No one has a more complete selection of removable and combo storage solutions than Third Wave. Our Syquest removable is available in the economical Standard enclosure, the Premium enclosure, or as a dual Syquest drive system. Combo drives range from the 40mb Quantum with a Syquest or tape drive, all the way up to 1GB fixed drives with DAT or Optical drives. Combo drives are space-saving, money-saving options for the discriminating buyer who wants no compromises.

### •Six Years of Support & Service

Third Wave is in its sixth year of serving the Macintosh community. We strive to provide the best technical support possible. We are authorized resellers of every product we sell, including Apple, RasterOps, Radius, SuperMac, etc. We ship Federal Express for the best shipping, too.

### •Bundled Drive Software

Included software and features: disk management software with partitioning, password protection, test features, bad block management, Mounter desk accessory, removable drive INIT, and more. The most complete formatting utility available for the Mac Fontina™, the ultimate font management utility from Eastgate Systems (\$69.95 value.) Other included software: complete Virus utilities, 12mb of public domain and shareware, 10mb slide show of 8/24 bit images created with StrataVision 3d, our own HyperCard utility, and much more. No one gives you more software than Third Wave.



## Third Wave Computing

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Major Credit Cards; Govt., University, and Corp. POs Accepted

Please circle 101 on reader service card.

### •SIMMs & Memory

Mac SIMMs (1, 4mb)	Call
16x SIMMs (1, 4mb)	Call
NTX SIMMs	Call
Portable 1, 2, 3mb	Call

Memory Third Wave utilizes the latest surface mount manufacturing technology to bring you economically priced SIMMs and memory products. Since we have complete control over the manufacturing process, you can count on our quality. Unlike other suppliers, we are manufacturers, not just box stuffers.

### •Performance Add-ons

DayStar FastCache IIci	299
DayStar Accelerators	Call
68851 PMMU w/Virtual	189

We sell many performance products but don't have room to list them all. Please call for more information.

### •Video & Monitors

Seiko Trinitron 14"	589
Sony 1304 14"	699
Ikegami Trinitron 19"	2299

Authorized Radius, RasterOps, and SuperMac resellers

## 800-284-0486

Drives to 2 Gigabytes  
1.3 Gigabyte DAT Backup  
2.3GB Exabyte Backup  
Opticals to 1GB  
Single/Dual Syquest  
Combination Drives  
Teac Tape Backup

Authorized Resellers of:  
DayStar Digital  
Radius  
RasterOps  
Sony  
and many more



# U.S. COMPUTER MERCHANTS™

## THIS MONTH'S SPECIALS

Microtek 300ZS .....	<b>\$1,679</b>
QMS-PS*410 .....	<b>\$2,049</b>
Quantum 170 Internal .....	<b>\$699</b>
Qume ScriptEN .....	<b>\$1,699</b>
RasterOps ColorBoard 264* .....	<b>\$389</b>
RasterOps ColorBoard 364* .....	<b>\$879</b>

Radius 19" Two Page Display .....	<b>\$1,299</b>
SIMMS .....	<b>\$45</b>
SyQuest Cartridges .....	<b>\$65</b>
SyQuest Removable Drive .....	<b>\$489</b>
TI Microlaser PS 17 .....	<b>\$1,599</b>
TI Microlaser PS 35 .....	<b>\$1,799</b>

### ACCELERATORS

DayStar Digital	
Fast Cache Ilici .....	<b>\$269</b>
Radius	
Accelerator 16 for +, SE .....	<b>\$549</b>
Accelerator 25 for SE .....	<b>\$899</b>

### FAX MODEMS

Abaton	
Interfax Modem 24/96 .....	<b>\$299</b>
Dove	
24/96 Fax Modem .....	<b>\$289</b>

### HARD DISK DRIVES

Imprimis	
MacWren 300 .....	<b>\$1,299/\$1,399</b>
MacWren 300 Runner .....	<b>\$1,479/\$1,579</b>
MacWren 600 .....	<b>\$1,749/\$1,849</b>
MacWren 1.2 Gig .....	<b>\$3,099/\$3,199</b>
Quantum	
TWO YEAR WARRANTY	
Quantum 40 .....	<b>\$329/\$399</b>
Quantum 80 .....	<b>\$459/\$539</b>
Quantum 105 .....	<b>\$499/\$599</b>
Quantum 120 .....	<b>\$639/\$699</b>
Quantum 170 .....	<b>\$699/\$799</b>
Quantum 210 .....	<b>\$849/\$959</b>

### MONITORS

Magnavox	
TWO YEAR WARRANTY	
14" Color Monitor .....	<b>\$429</b>
NEC	
MacSync 14" Color Monitor .....	<b>\$435</b>
Seiko	
14" Color Monitor .....	<b>\$589</b>
Sony	
1304 14" Color Monitor .....	<b>\$675</b>

### MEMORY

#### SIMM SALE \$45

FREE Installation Manual Included!

### MONITOR SYSTEMS

Magnavox	
14" Color Monitor with 8 bit Video	
Interface Mac II family† .....	<b>\$699</b>
14" Color Monitor with 24 bit Video	
Interface Mac II family*† .....	<b>\$799</b>
14" Color Monitor with 8 bit Video	
Interface Mac SE/30 .....	<b>\$799</b>
Nubus adapter .....	<b>\$95</b>

Radius	
Full Page Display for +, SE .....	<b>\$999</b>
Pivot Display W/Video Card .....	<b>\$1,199</b>
Two Page Display 19" .....	<b>\$1,299</b>
Two Page Display 21" .....	<b>\$1,499</b>
RasterOps	
ColorBoard 264* .....	<b>\$389</b>
ColorBoard 364* .....	<b>\$879</b>
Samsung	
15" Full Page Monitor with Video Interface .....	<b>\$485</b>
Mac Plus, SE, SE/30 and Mac II Family	
15" Full Page Monitor with Video Interface .....	<b>\$579</b>

### OPTICAL HARD DRIVES

Pinnacle Micro, Inc.	
650 Meg Optical Drive with Interface .....	<b>\$3,399</b>
Racet	
650 CMOS Optical w/interface .....	<b>\$2,999</b>

### PRINTERS

Kodak	
Diconix 150 .....	<b>\$489</b>
Diconix Color 4 Printer .....	<b>\$1,169</b>
QMS	
QMS-PS*410 PostScript* .....	<b>\$2,049</b>
Qume	
CrystalPrint Publisher I .....	<b>\$1,899</b>
CrystalPrint Publisher II .....	<b>\$2,395</b>
ScriptEN PostScript .....	<b>\$1,699</b>
Seiko	
Smart Label Printer .....	<b>\$199</b>
Texas Instruments	
PS17 Microlaser with interface .....	<b>\$1,599</b>
PS35 Microlaser with interface .....	<b>\$1,799</b>

### REMOVABLE DISK DRIVES

#### SyQuest 42 Removable \$449

cartridge not included

Cartridges \$65

### SCANNERS

Microtek	
300GS .....	<b>\$1,249</b>
300ZS .....	<b>\$1,679</b>

### UPS

Safe Power Systems	
Safe 250 .....	<b>\$189</b>
Safe 400S .....	<b>\$369</b>

\*while supplies last †requires nubus adaptor.



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All prices subject to change without notice. All products subject to availability.

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# Aim with MacTel for your Apple solutions!



**C**ontact the professionals at **MacTel Technology**. We handle only the best in Macintosh hardware, systems and peripherals. Names like **Apple, Nikon, Radius, RasterOps, Daystar, PLI, Sharp** and our own, top-quality **Index brand**.

We provide services such as international sales, service and banking; competitive system quotes; our own research and manufacturing facility; and qualified, reliable technical support (before and after the sale.) **It's no wonder if the vast majority of our business is repeat business.**



## INDEX Hard Drives

**conomy series:** bundled with formatting and testing software, all cables to plug-N-Go

	Internal	External	
Quantum 3.5" ProDrive			
40 Mb 12 ms	\$279	\$359	
52 Mb 12 ms	\$299	\$379	Slitline
80 Mb 12 ms	\$429	\$509	
105 Mb 12 ms	\$459	\$539	
105 Mb 12 ms	\$499	\$579	Slitline
170 Mb 12 ms	\$729	\$809	
210 Mb 12 ms	\$799	\$879	

	Internal	External	
Imprimis-Wren (Seagate) 5.25"			
30 Mb 16 ms	\$969*	\$1049	WR
30 Mb 16 ms	\$1199*	\$1299	WR
30 Mb 10.7 ms	\$1699*	\$1799	WR
35 Mb 16 ms	\$1599*	\$1699	WR
30 Mb 16 ms	\$1759*	\$1859	WR
40 Mb 16 ms	\$1859*	\$1959	WR
1 Gigabyte 16 ms	\$2999*	\$3099	WR

[H.H. = Half Height • WR = Wren Runner]

**ite series:** bundled with HD Chauffeur, Backmatic and AutoSave II, Superior casing and all cables to plug-N-Go.

Quantum 3.5" ProDrive HD

	Internal	External	Ext. w/ Disk Twin
30 Mb 12 ms	\$399	\$499	\$899
52 Mb 12 ms	\$409	\$509	\$909
30 Mb 12 ms	\$569	\$669	\$1069
35 Mb 12 ms	\$599	\$699	\$1099
35 Mb 12 ms	\$649	\$749	\$1149
70 Mb 12 ms	\$899	\$999	\$1399
110 Mb 12 ms	\$999	\$1099	\$1699

Imprimis-Wren (Seagate) 5.25" Professional Harddrives

	Internal	External	Ext. w/ Disk Twin
80 Mb 16 ms	\$1099*	\$1219	\$1619 (Half Height)
20 Mb 16 ms	\$1499*	\$1619	\$2019
30 Mb 10.7 ms	\$1949*	\$2069	\$2469 (Wren Runner)
25 Mb 16 ms	\$1899*	\$2019	\$2419 (Half Height)
40 Mb 16 ms	\$2099	\$2119	\$2519
40 Mb 16 ms	\$2199*	\$2319	\$2719
2 Gb 16 ms	\$3299*	\$3419	\$3819

\*Fits only MacII, MacIIx & MacIIx. All INDEX external Harddrives are supplied with universal power supplies, for world-wide adaptability. Backmatic and Autosave II are registered trademarks. All INDEX "EUTE" harddrives are bundled with Backmatic and AutoSave software.

**Golden Triangle - "DISKTWIN" .... \$975.00**

Continuous data protection for Macintosh (Nubus or SE/30): Up to 100% "HOT BACKUP", automatic/transparent Appleshare switching to functioning drive. **A MUST FOR IMPORTANT SERVERS.**

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\*Expert and novice modes with balloon help.

## VisionPro Monitor Systems

When purchasing Systems, compare the options and features. VisionPro Color Graphic cards are manufactured under license for MacTel Technology and support Macintosh graphical needs now and in the future.

### Video Graphic Systems

#### A. 8 Bit Business System.

8 Bit Video Card non Upgradable,  
20" Ikegami Trinitron (CT-20)  
75 Hz ..... \$2695

#### B. 8 Bit SystemPro 20",

VisionPro\* VideoCard,  
20" Ikegami Trinitron (CT-20)  
75 Hz ..... \$3325

#### C. 8 Bit SystemPro 19",

VisionPro\* VideoCard, 19"  
SanyoTrinitron (GDM 1952)  
75 Hz ..... \$3625

**24 Bit VisionPro Interface Upgrade Kit ..... \$ 600**

\*All VisionPRO Interface cards have multi-monitor support (Sony 19" & Ikegami 20"), support BlockMode transfer & acceleration, Upgradeable 8-Bit to 24-Bit cards, Pan/Zoom 2X & 4X and virtual desktop.

### Monitors

Seiko 14" Trinitron CM 1445  
Hi-Res Monitor w/Tilt & Swivel ..... \$ 589

Hitachi 14" MVX Super  
Hi-Res Monitor w/Tilt & Swivel ..... \$ 575



### Video Interface/cards

8-Bit Vision ST 813  
for 13" or 14" Monitor...\$275

24-Bit Vision ST 2413  
for 13" or 14" Monitor...\$375

Vision ST Upgrade Kit (8 - 24 Bit)..... \$135

VisionPro 8 - 24 Bit Upgrade Kit..... \$700

## Macintosh CPU's and Systems

- Mac Classic (fully loaded)
- Mac SE/30
- Mac II LC
- Mac II SI
- Mac II CI
- Mac II FX
- "NEW" Backlit Mac Portable
- LaserWriter II NT, NTX and Personal LaserWriter's

- Also fax for quote on complete Apple Macintosh product line

Fax/Call for systems quote and competitive pricing •  
Government • Universities • Corporations (on approval)  
bids requested •

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No surcharge for Visa or MasterCard. Your credit card will not be charged until your order is ready to ship. International orders call or fax for details. European banking service available. • Purchase orders accepted from university, government, military, NET 30 and corporate (on approval). • Please allow 10 days for personal and company checks to clear. • Returned merchandise must be authorized to expedite process. Call 512/451 2600 for RMA number. • All defects will be replaced or repaired at MacTel's discretion. • Shipping and handling charges not refundable. • Product must be in original shipping container including all packing materials. • All products are subject to a 5% restocking fee. • Prices subject to change without notice and all products subject to availability. •

large quantity discounts

## Index Memory Modules

1 Mb Surface Mounted /low Profile, 70/80 ns. lifetime warranty..... **\$ 41**

1 Mb FX and LaserWriter II SIMM 70/80 ns..... **\$42**

2 Mb Surface Mounted / Low Profile for Mac II SI/CI ..... **\$159**

4 Mb SIMM's (all Mac's) Surface Mounted / -80 ns • bundled with Maxima (min. 4 units for Maxima software)..... **\$209**

**ALL INDEX SIMMS HAVE GOLD CONTACTS AND TRACES • LIFETIME WARRANTY • CALL FOR CURRENT PRICING •**

**NEW: 1 Mb TI Microlaser PS 17&35 memory upgrade**  
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Complete Memory product line for PS/2, Compaq, Toshiba, DELL, Zenith, Sun ...fax/call for quote

## Hardware

### Applied Engineering

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QuadralINK..... **\$ 204**

### DayStar Digital

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PowerCache 40..... **\$ 999**  
PowerCache 50..... **\$ 1799**

\*call for exchange prices\*  
40 MHz PowerCard II, IIx & CX..... **\$ 1499**  
50 MHz PowerCard II, IIx & CX..... **\$ 1999**

MacTel Networking Products (100% Apple compatible) "call for more info"



### Syquest Technology

Syquest I-10 ..... **\$ 72**

SQ 400 I1-20 ..... **\$ 69**

Cartridges

(work with all Syquest drives)

MacTel Extended Keyboards: English ..... **\$ 99**  
German ..... **\$ 119**  
French }

### Microtek Scanners

MSF 300 GS, incl. everything..... **\$ 1645**  
MSF 300 Z ColorScan, incl. Color Studio..... **\$ 1899**  
MSF 400 GS..... **\$ 2645**

### RasterOps ..... Call for Pricing

Colorboard 208/264 & 85/245  
Colorboard 208/85 VRAM Expansion kit ..... **\$ 135**

\*364" VideoCard  
Clear vue/ GS system for SE/30 or MacII  
8L ProSeries system  
24L ProSeries system  
RasterOps Graphic Accelerator

### Texas instruments

MicroLaser P5-17 w/ 17 fonts ..... **\$1699**

MicroLaser P5-35 w/ 35 fonts ..... **\$1999**

1Mb TI Microlaser PS 17 & 35 memory upgrade..... **\$125**

(increase printing speed and download more fonts)



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MAC-PRO KEYBOARD .....	120.00
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MAC TO IMAGEWRITER II CABLE .....	10.00
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SURGE PROTECTOR .....	25.00
SWITCHBOARD KEYBOARD .....	159.00
TARGUS LAPAC 2 DELUXE .....	60.00
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TARGUS PLUS/SE CASE .....	60.00
TARGUS DELUXE MAC SE/EXT.KB. ....	65.00
TARGUS IIC/CI CASE .....	70.00

TARGUS IMAGEWRITER CASE .....	60.00
TURBO MOUSE .....	109.00

## HARDWARE

CLEARVUE/II SYSTEM .....	999.00
CLEARVUE/SE .....	1199.00
CLEARVUE/GS .....	1499.00
CLEARVUE/GS30 .....	1499.00
COLORBOARD 264 .....	525.00
COLORBOARD 264-SE/30 .....	599.00
COLORBOARD 364 .....	1399.00
DAYSTAR 25MHZ '030 IICx, w/co-proc. ....	1599.00
DAYSTAR 40MHZ '030 IICi .....	1050.00
DAYSTAR 50MHZ '030 IICi .....	1799.00
DAYSTAR 40MHZ '030 IICx, w/co-proc. ....	2150.00
DAYSTAR 50MHZ '030 IICx, w/co-proc. ....	2699.00
DAYSTAR FAST CACHE IICi .....	299.00
DICONIX JET PRINTER .....	459.00
DOVEFAX 24/96 EXTERNAL .....	299.00
E-MACH. Z21 IQ/MACII .....	2499.00
E-MACH.T16,CARD,STAND .....	2299.00
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MICROTEK MSF-300ZS .....	1799.00
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NEC COLORMATE POSTSCRIPT .....	6199.00
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NEC SILENTWRITER 2 MODEL 290 .....	2799.00
NEWGEN TURBO PS300 .....	3250.00
NEWGEN TURBO PS360 .....	3599.00
NEWGEN TURBO PS400 .....	3899.00
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QUICKTEL 4800 BAUD SENDFAX .....	499.00
QUME CRYSTAL PRINT EXPRESS .....	3599.00
QUME CRYSTAL PRINT - PUBLISHER II .....	2550.00
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SONY 1302 .....	635.00
SONY 1304 .....	699.00
TOSHIBA CD ROM .....	699.00
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- 300 DOTS PER INCH RESOLUTION.
- SUPPORTS APPLE TALK AND SERIAL.

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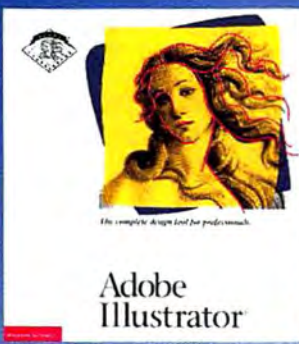
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FREEHAND 2.0 .....	325.00		
MACROMIND DIRECTOR .....	420.00		
MINICAD+ .....	499.00		
OMNIDRAFT .....	65.00		
OMNIPAGE V2.0 .....	510.00		
OMNIPROOF .....	99.00		
OMNISPELL .....	65.00		
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PHOTOSHOP .....	499.00		
PIXEL PAINT PROF. ....	375.00		
SUPERPAINT V2.0 .....	125.00		
TYPESTYLER .....	110.00		

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MACLINK PLUS .....	110.00		
MACPRINT .....	90.00		
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S.A.M. ....	65.00		
SOFTPC AT/EGA OPTION ..	127.00		
SOFTPC V1.3 .....	230.00		
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SUM (SYM UTIL. MAC) .....	93.00		
SUPERLASER SPOOL V2.02 ..	80.00		
SUPERSPOOL V5.0 .....	55.00		
THINK'S C 4.0 .....	154.00		
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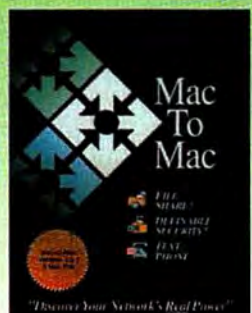
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with the Generation Systems™ Video Card  
19" Trinitron display with 24-bit color card, hardware Zoom and Pan, cable and tilt/swivel stand. Multiple resolution and flicker-free.

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• 14" Sony Trinitron Picture Tube  
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• Works with 24-bit cards  
• Comes with cable

**Only \$599**

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Unequalled price and performance make these monitors the first choice of knowledgeable buyers.

**THIS 19" PROFESSIONAL DISPLAY OFFERS:**

- 75 Dpi WYSIWYG
- 1024 x 836 RESOLUTION
- 75Hz REFRESH RATE
- VIDEO BOARD
- TILT/SWIVEL STAND

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Grayscale for Mac II series ..... \$1799  
Grayscale for Mac SE/30 ..... \$1965

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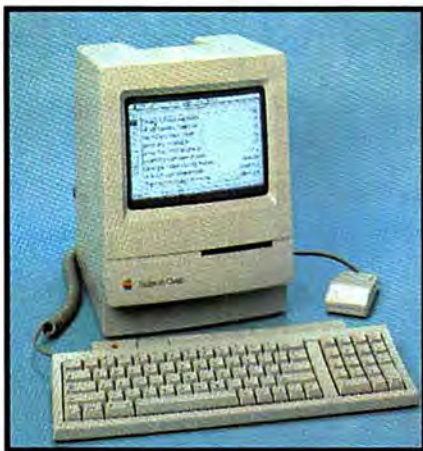
System	Colors	Upgradable to 24-Bit Color	Price
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PL 200 Int.....	1465
PL 250 Int.....	1765

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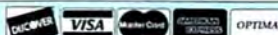
MicroTek 300 ZS (w/ ColorStudio)	\$1675
MicroTek 300GS	\$1529
MicroTek 400GS	\$2639
Abaton Scan/Color	
(24-bit color with Color Mac Kit)	\$1364

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**If Ordering At The Last Minute,  
Our Air Express Service Can Rush  
Your Software/Hardware To You.**

Send Coupon and List of Items Desired To:  
**Discounts By Mail Department**  
**MacSavings, 60 P Access Rd, Suite #101, Stratford, CT 06497**

TO BE ELIGIBLE FOR THE \$1.00 PER ITEM DISCOUNT YOU MUST:

1. Fill out all items.    2. Send in our ad with the items you desire circled.

Name \_\_\_\_\_

Address (include company name) \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone No. at above address \_\_\_\_\_

Check form of payment:  
☐ VISA    ☐ MasterCard    ☐ DISCOVER    ☐ C.O.D.  
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2. If we send a partial order, there's no second shipment charge.
3. All shipments insured at no extra charge.
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6. 120-day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to change without notice. All items subject to availability.
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- Order by 5:30pm EST Monday-Friday and all (in-stock items) will ship that evening for overnight delivery, barring system failure, etc.
- Alaska, Hawaii, outside Continental U.S., APO and FPO: call (203) 380-0280 or write for shipping information.
- Mail-in orders (especially from foreign countries), please furnish telephone or fax number.



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950 Tower Lane, 18th Floor  
Foster City, CA 94404  
Fax Number (415) 378-6903

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Lee J. Uniacke, Advertising Sales Manager  
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Kim Riskas, Advertising Coordinator (415) 378-5606  
Kathryn Cumberlander, Classified Advertising Director  
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**1. Please indicate which of the following computers you currently use in your company or organization: (check all that apply)**

- ☐ a) Mac Plus ☐ d) IBM PC  
☐ b) Mac SE ☐ e) Other  
☐ c) Mac II

**2. For how many micro computers do you buy products?**

- ☐ f) 1-4  
☐ g) 5-49  
☐ h) 50+

**3. Your primary job function is: (check one)**

- ☐ i) Administrative/General Management  
☐ j) MIS/DP, Communications Systems, Programming  
☐ k) Engineering/R&D  
☐ l) Finance/Accounting  
☐ m) Marketing/Sales  
☐ n) Computer Dealer/VAR

**4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)**

- |   |   |
|---|---|
| <b>SOFTWARE</b>   | <b>HARDWARE</b>                               |
| <input type="checkbox"/> a) Accounting                      | <input type="checkbox"/> w) Mainframe         |
| <input type="checkbox"/> p) Spreadsheets/Financial Planners | <input type="checkbox"/> x) Mini              |
| <input type="checkbox"/> q) Project Managers                | <input type="checkbox"/> y) PC                |
| <input type="checkbox"/> r) Word Processors                 | <input type="checkbox"/> z) Printers/Plotters |
| <input type="checkbox"/> s) Database Managers               | <input type="checkbox"/> 1) Monitors          |
| <input type="checkbox"/> t) Graphics                        | <input type="checkbox"/> 2) Disk/Tape Back-up |
| <input type="checkbox"/> u) CAD/CAM                         | <input type="checkbox"/> 3) Add-in Boards     |
| <input type="checkbox"/> v) Communications                  | <input type="checkbox"/> 4) Communications    |

**5. Are you involved in the purchasing of microcomputer equipment at your company?**

- ☐ 5) Yes ☐ 6) No

**6. If so, what function do you serve in the buying process?**

- ☐ 7) Evaluations/Specification  
☐ 8) Recommendation ☐ 9) Buyer/Purchaser

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MU3912

Name \_\_\_\_\_

Phone (\_\_\_\_\_) \_\_\_\_\_

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☐ 8) Recommendation ☐ 9) Buyer/Purchaser

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MU3911

Name \_\_\_\_\_

Phone (\_\_\_\_\_) \_\_\_\_\_

Company \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

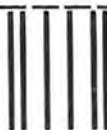
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**USE THIS CARD TO OBTAIN *FREE*  
INFORMATION ABOUT MACINTOSH PRODUCTS  
AND SERVICES IN THIS ISSUE**

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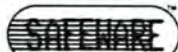
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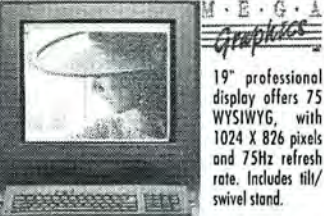
20MB INTERNAL .....	\$290
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20MB ... \$317 • 30MB ... \$365 • 40MB QUANTUM ... \$485	
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The Cutting Edge Full Page display offers outstanding clarity and sharpness. Refresh rate: 75Hz; 640 by 870 pixel resolution. Ideal for desktop publishing. Tilt and swivel stand included.	
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19" Trinitron display includes a video card, zoom and pan, cables and tilt/swivel stand!	
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19" professional display offers 75 WYSIWYG, with 1024 X 826 pixels and 75Hz refresh rate. Includes tilt/swivel stand.	
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ClearVue SE-19" .....	\$1199
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24S/Accelerator MAC II Family .....	\$795
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ColorBoard 208 8bit card .....	\$395
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45	Seagate	28	299	359
60	Seagate	28	NA	389
80	Seagate	28	NA	439
<b>80</b>	<b>Quantum*</b>	<b>19</b>	<b>469</b>	<b>529</b>
105	Quantum*	19	499	559
105	Toshiba	20	479	549
200	Maxtor	15	929	979
210	Quantum*	16	849	899
320(HH)	Micropolis	14	NA	1449
320(FH)	Imprimis	16	NA	1449
600(FH)	Imprimis	16	NA	1899
660(FH)	Micropolis	16	NA	2099
<b>1050(FH)</b>	<b>Imprimis</b>	<b>16</b>	<b>NA</b>	<b>2999</b>
1050(FH)	Micropolis	14	NA	3299

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25ms. Includes 45Mb cartridge. Extra Cartridge \$79.

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**\$ 599**

External optical storage unit.  
350ms access time.  
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Complete memory kits for your MacII,  
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Includes "Express Tape" by NuVo Labs.  
Extra Tape Only **\$49**

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Portable, fast, & affordable removable media.  
 Syquest mechanism. Mac & DOS compatible.  
 2 year warranty.

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 Syquest cartridge.....w/ purchase of drive \$69



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 RasterOps 264/364 24-bit color card.....\$399/\$899  
 Magic 19" 8-bit color card for II.....\$499



14" NEC MacSync with tilt/swivel.....\$449  
 8-bit card & 14" NEC MacSync.....\$688  
 24-bit card & 14" NEC MacSync.....\$849  
 19" Color Trinitron Monitor.....\$2099

### HARDWARE

#### Accelerators

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Daystar 33MHz 030 II, IIx/IIcx	1499/1899
Daystar 40MHz 030 II, IIx/IIcx	1699/1975
Daystar FastCache II	2109/2599
Daystar PowerCache I/II 40MHz	1199
Daystar PowerCache I/II 50MHz	2024
Daystar SCSI Powercard 0 MBS	1133
Magic RailGun 030 Accelerator	499
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Magic RailGun 030 Accelerator 33	1199
Solstice MacII 33MHz/2	1299
Solstice MacII 33MHz/2 w/68882	1449
Solstice II Classic Card Static Ram	545

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3 Com Ethernet/SE	379
Asatronic Modem C	343
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Asante Macoon+ SE30E	339
Avatar MacMainFrame DX	849
Avatar MacMainFrame II	705
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Cayman Gator Card Ethernet	452
Cayman Gator Mail 10 User	669
Cayman Gator Print	353
Cayman Gator Share	1319
CC Mail	339
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Dayna EtherPrint Card	359
Dayna Net/4L	549
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DCA IRMA	825
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### HARDWARE

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 InfoSphere MacSync  
 Magic Mac/Net Node 8Pin  
 Novell EtherPort SE/SE30  
 Novell TurboLink II  
 NuVetech NuVetech SC  
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 Oracle Mac Developer  
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 Shiva EtherGate

## NEC MacSync

Includes tilt/swivel stand

**\$449**



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 White Pine Express X Windows  
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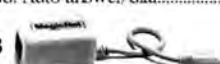


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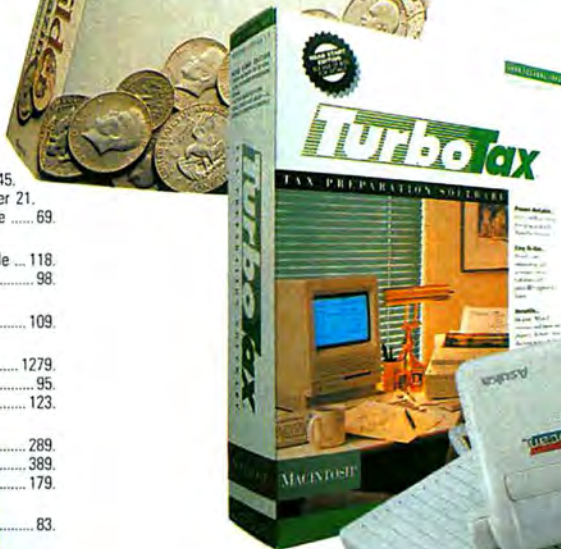
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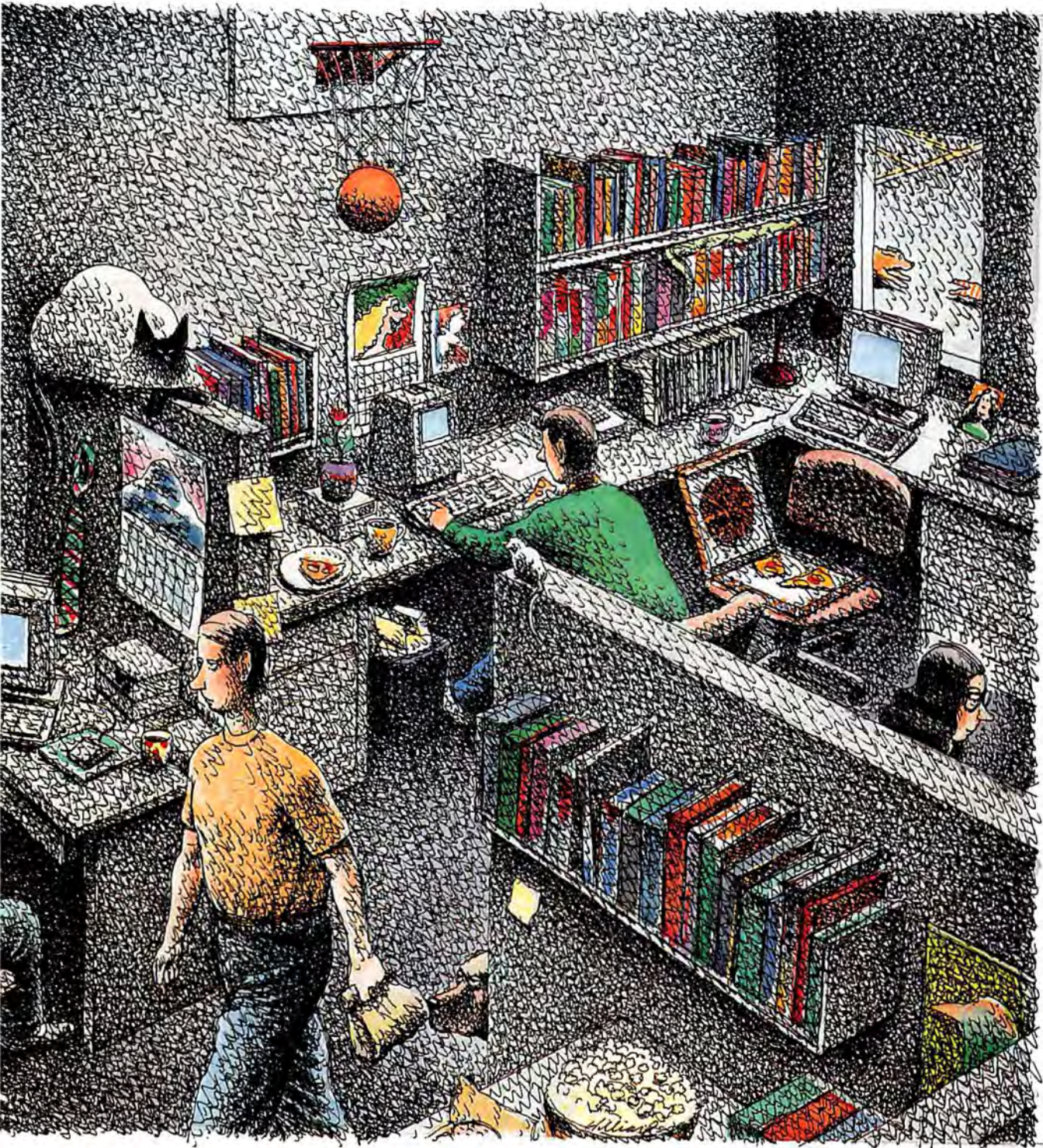
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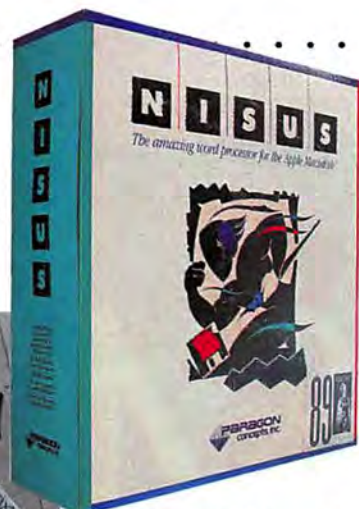
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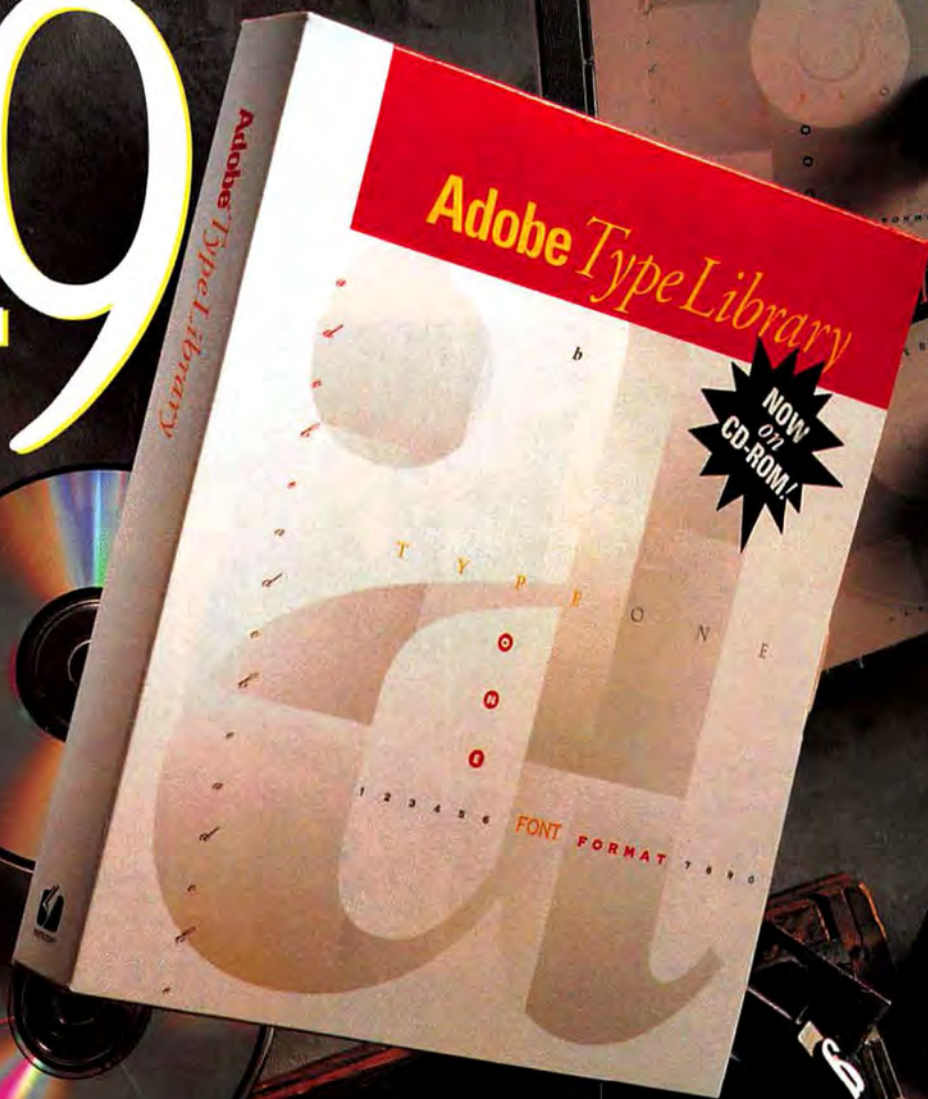
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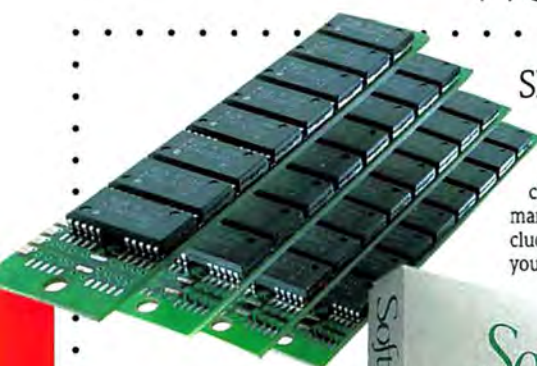
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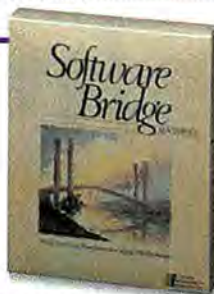
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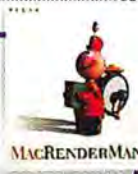
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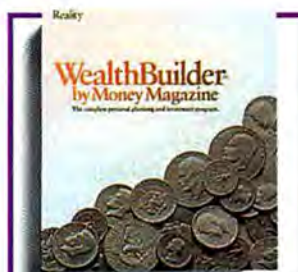
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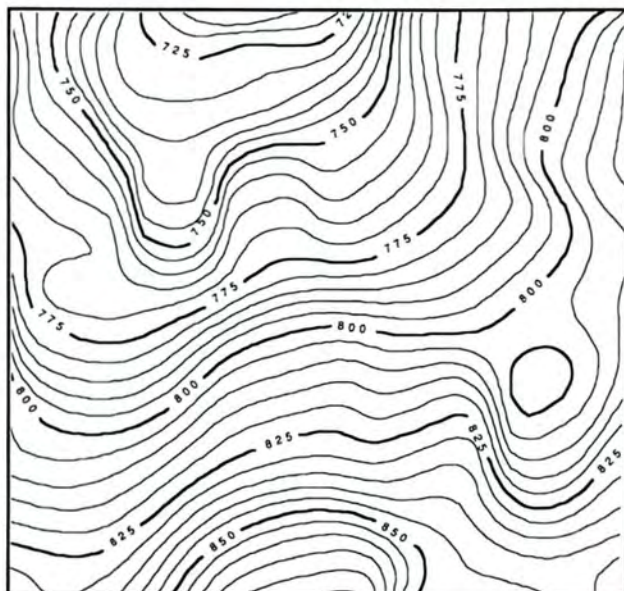
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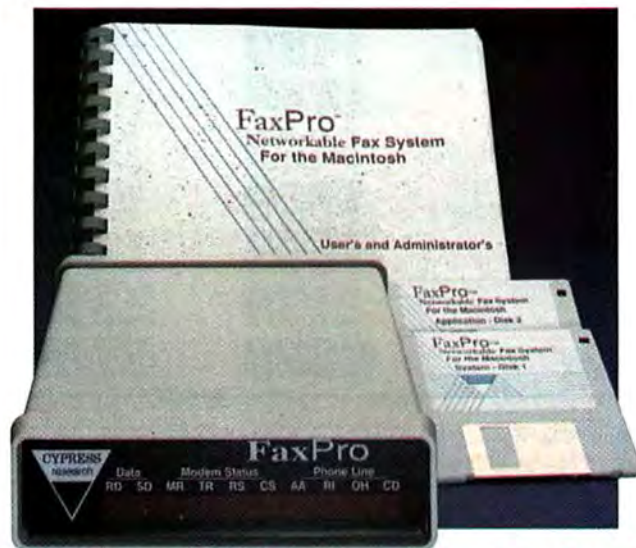
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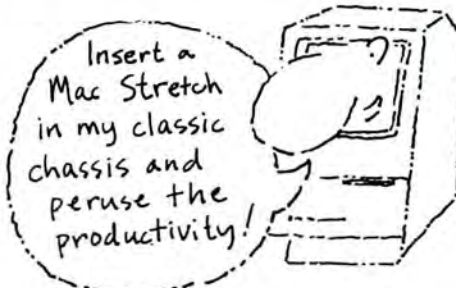
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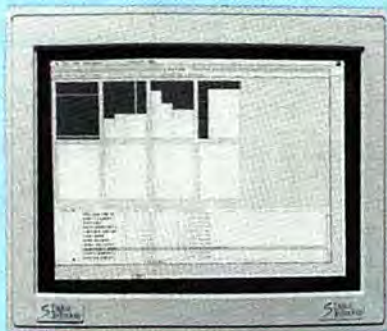
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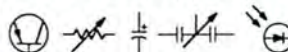
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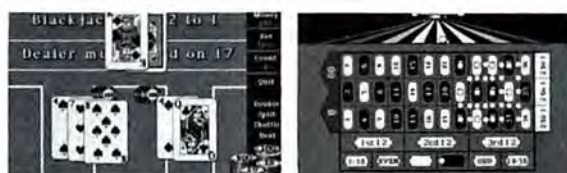
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# The Taste Test



**John Sculley is credited with inventing the taste test to sell sugar water. But on the Mac, what tastes good has somehow been overshadowed by what's in good taste.**



It's easy to say that the general public is an agglomeration of slack-jawed, hair-knuckled goofballs. See how easy it is? But although there are more than a few Neanderthals roaming the streets, the public is surprisingly bright in unusual circumstances.

A few years ago, most pundits predicted that the arrival of PostScript and desktop typesetting and publishing would unleash a torrent of bad taste. They said that every untrained boob who didn't know a pica from a pixel would produce gosh-awful-looking documents with a mishmash of typefaces and design elements that would disgust even the cat.

Years passed, and we got just the opposite. In fact, even when computer users were given the opportunity to go berserk, most remained conservative. Some users have a little more flair than others, but the expected goofy-looking documents have never appeared—they're more likely to come from a guy with an IBM Executive typewriter and a tasteless clip-art book. Even computerized clip art has been used judiciously, despite the abuse potential.

Anyway, the public's bent for conservative personal presentations is exemplified by the fact that the most popular Adobe type fonts remain Times and Palatino. Even Bookman and New Century Schoolbook—hardly wild-and-crazy faces—are seldom used.

This unpredicted nonphenomenon is important, because the next phase for potential abuse is desktop video. New products spearheaded by the Amiga-based Video Toaster, from NewTek of Topeka, Kansas—the highlight of the recent Comdex trade show—mean that professional videotaped presentations will now be made in the office rather than in expensive postproduction video studios. Apple will offer a mixing studio similar to NewTek's device, and I expect to see a booming business when the millions of camcorder fanatics discover that they can produce whole shows at home for next to nothing.

But with all the features of a video studio at their disposal, what will the masses of untrained users do? Probably surprise you.

If the experience with desktop publishing hadn't indicated otherwise, one would expect a flood of pathetic amateurish schlock—overdone special effects, comball cuts and fades, bad editing. But the mechanism that creates crapola doesn't exist in a vacuum. The desktop-publishing crowd has copied prevailing taste. The view was conservative but not far from the mark. What they didn't know


about sizes and leading and other typesetting idiosyncrasies was automatically adjusted by the applications. (Aren't defaults wonderful?)

We can expect the same from the video producers who use new software. Some societal mechanism creates higher-quality results than expected. It seems that once people have the tools to produce high quality, they don't want to look foolish and they expend additional effort to make their work "professional." So when someone gets a PostScript printer, the presentation of self (even in simple memos) takes on new meaning. The tool offers owners incredible new capabilities. What better way to show them off than to use them properly?

If people are given the right tool, they tend to use it properly. In the case of desktop typesetting, that means producing something that looks as though they know what they're doing. In fact, people make a point of doing it correctly—even if it means redoing the same document by repeated trial and error, reprinting it over and over to "get it just right." Users invest the time necessary to learn the tool.

When the tool is hackneyed or incomplete, such as the early HP LaserJet printer (it essentially offered only high-speed, typewriterlike output), the result is poor. Users could fiddle with inconvenient and sluggish downloadable bit-mapped fonts, but the printout was seldom pleasing. Plain Courier was preferred. Only recently have proper tools been introduced in the PC world, and only recently have PC users started producing attractive documents.

The assumption that desktop typesetting will exemplify the bad taste of the public comes from the old notion that nobody ever went broke underestimating the public's taste. But the pundits overlooked the tool-using nature of Homo sapiens. We call computers and their software all sorts of things, from brain amplifiers to grandiose calculators, always forgetting that they are really tools. Not in the traditional sense of a socket wrench or a hammer. This new programmable tool can do all the things a wrench never could—such as move words around or produce a video. The nature of humankind is to cherish tools. When the tool is given a new function, its new ability is respected. This respect yields quality workmanship, whether evidenced as a correctly formatted memo, an elaborate newsletter, or a half-hour home-produced sitcom.

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